The College of
WILLIAM & MARY

2011-2012
GRADUATE ARTS AND SCIENCES PROGRAM CATALOG

AUGUST 2011

Note: This catalog provides announcements for the 2011-12 academic year. It is current until August 2012. The College reserves the right to make changes in the regulations, charges, and curricula listed herein at any time.

Catalogs are issued for other College programs as follows:

Undergraduate
School of Business
School of Education
School of Marine Science
School of Law
Summer Sessions
Special Programs

GENERAL STATEMENT OF POLICY

The College of William and Mary does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, disability or age in its programs and activities. Inquiries regarding the non-discrimination policies should be addressed to:

Ms. Tammy Currie
Director of Equal Opportunity
Hornsby House
P.O. Box 8795
Williamsburg, VA 23187-8795

The College of William and Mary Diversity Statement

The College of William and Mary in Virginia is a community of teachers, students, and staff who share our national ideals of human equality, democracy, pluralism, and advancement based on merit. We give life to these principles - and prepare women and men to be citizens of the wider world - when we value diverse backgrounds, talents, and points of view.

As a community, William and Mary believes that cultural pluralism and intellectual freedom introduce us to new experiences, stimulate original ideas, enrich critical thinking, and give our work a broader reach. We cannot accomplish our mission of teaching, learning, discovery, and service without such diversity.

William and Mary belongs to all Virginians, to the nation, and to the world. Yet our College, like our country, failed for many years to open the door of opportunity to all people. In recent decades, William and Mary has made itself a more diverse community, and thus a better one. Structures and habits that create injustices, however, have yet to be fully banished from American society. We are committed to establishing justice.

The College of William and Mary strives to be a place where people of all backgrounds feel at home, where diversity is actively embraced, and where each individual takes responsibility for upholding the dignity of all members of the community.

-Approved by the Board of Visitors on November 17, 2006.

The College Of
WILLIAM & MARY

THE GRADUATE ARTS & SCIENCES PROGRAM CATALOG 2011-2012

WILLIAMSBURG, VIRGINIA 23187

(757) 221-2467
www.wm.edu/as/graduate

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The College

Mission Statement

The College of William and Mary, a public university in Williamsburg, Virginia, is the second-oldest institution of higher learning in the United States. Established in 1693 by British royal charter, William and Mary is proud of its role as the Alma Mater of generations of American patriots, leaders and public servants. Now, in its fourth century, it continues this tradition of excellence by combining the best features of an undergraduate college with the opportunities offered by a modern research university. Its moderate size, dedicated faculty, and distinctive history give William and Mary a unique character among public institutions, and create a learning environment that fosters close interaction among students and teachers.

The university's predominantly residential undergraduate program provides a broad liberal education in a stimulating academic environment enhanced by a talented and diverse student body. This nationally acclaimed undergraduate program is integrated with selected graduate and professional programs in five faculties - Arts and Sciences, Business, Education, Law, and Marine Science. Masters and doctoral programs in the humanities, the sciences, the social sciences, business, education, and law provide a wide variety of intellectual opportunities for students at both graduate and undergraduate levels.

At William and Mary, teaching, research, and public service are linked through programs designed to preserve, transmit, and expand knowledge. Effective teaching imparts knowledge and encourages the intellectual development of both student and teacher. Quality research supports the educational program by introducing students to the challenge and excitement of original discovery, and is a source of the knowledge and understanding needed for a better society. The university recognizes its special responsibility to the citizens of Virginia through public and community service to the Commonwealth as well as to national and international communities. Teaching, research, and public service are all integral parts of the mission of William and Mary.

Goals

In fulfilling its mission, William and Mary adopts the following specific goals:

- to attract outstanding students from diverse backgrounds;
- to develop a diverse faculty which is nationally and internationally recognized for excellence in both teaching and research;
- to provide a challenging undergraduate program with a liberal arts and sciences curriculum that encourages creativity, independent thought, and intellectual depth, breadth, and curiosity;
- to offer high quality graduate and professional programs that prepare students for intellectual, professional, and public leadership;
- to instill in its students an appreciation for the human condition, a concern for the public well-being, and a life-long commitment to learning; and
- to use the scholarship and skills of its faculty and students to further human knowledge and understanding, and to address specific problems confronting the Commonwealth of Virginia, the nation, and the world.

The Campus

William and Mary is a university community, small enough to provide for relationships that allow collaborative teaching and learning, large enough to have the resources to achieve excellence. An important aspect of this community is its location in the beautiful and historic city of Williamsburg, where it constitutes an integral part of the restoration of Colonial Williamsburg. The partnership of the College, the City, and the Restoration, and the educational, cultural, and recreational opportunities afforded to all students by this partnership, add to the quality of life and the quality of education at William and Mary.

The campus, comprising approximately 1,200 acres of land, extends from the western edge of the restored area of Colonial Williamsburg to Lake Matoaka and its surrounding wooded land. Within its boundaries are three contiguous sections known today as the Historic Campus, the Old Campus, and the New Campus, and, a short walk to the southeast, the William and Mary School of Law.

The Historic Campus is the site of three restored pre-Revolutionary buildings. The Sir Christopher Wren Building (1695, restored 1928-31), still in daily classroom use, is the oldest academic building in the United States. The Brafferton (1723, restored 1932), originally a school for Indians established with a bequest from the English scientist Robert Boyle, today contains administrative offices. The third building, the President's House (1732, restored 1931), has served as home for each of the twenty-five presidents of the College.

Sir Christopher Wren Building

Administrative Officers

Chancellor

Sandra Day O'Connor

Board of Visitors

(As of July 1, 2011)

Jeffrey B. Trammell '73, *Rector*
Charles A. Banks III, *Vice Rector*
Dennis H. Liberson '78, *Secretary*

Janet M. Brashear '82
Colin G. Campbell
Timothy P. Dunn '83
Edward L. Flippen, M.B.A. '67, J.D. '74
Laura L. Flippin '92
Thomas R. Frantz '70, J.D. '73, M.L.T. '81
R. Philip Herget III
Leigh A. Pence '00
L. Clifford Schroeder, Sr.
Robert E. Scott, J.D. '68
Peter A. Snyder '94
Todd A. Stottlemyer '85
Michael Tang '76
John C. Thomas

Student Representatives

Kaveh Sadeghian	College of William and Mary
Emily R. Michalek	Richard Bland College

Faculty Representatives

Alan J. Meese '86	College of William and Mary
Steven E. Martin	Richard Bland College

Administration for Graduate Affairs

W. Taylor Reveley, III	President
Michael R. Halleran	Provost
Dennis Manos	Vice Provost for Research and Graduate Studies
Virginia M. Ambler '88	Vice President for Student Affairs
Samuel E. Jones '75	Vice President for Finance
Anna B. Martin	Vice President for Administration
Sean M. Pieri	Vice President for University Development
Eugene Tracy	Interim Dean of Arts and Sciences
S. Laurie Sanderson	Dean of Graduate Studies and Research, Arts and Sciences
John T. Wells	Dean, School of Marine Science and Director Virginia Institute of Marine Science

Linda Schaffner	Associate Dean of Academic Studies, School of Marine Science
Lawrence B. Pulley '74	Dean, Mason School of Business
Jon W. Krapfl	Associate Dean, Mason School of Business
J. Robert Mooney	Chief Financial Officer, Mason School of Business
David H. Murray	Assistant Dean for Information Technology Mason School of Business
James M. Olver	Assistant Dean for the Full-Time MBA Program Mason School of Business
Prabhu K. Aggarwal	Assistant Dean for Executive and Professional Programs Mason School of Business
G. Thomas White	Assistant Dean for Accounting Programs Mason School of Business
William T. Geary	Assistant Dean for the Undergraduate Program Mason School of Business
Linda Noble Espahbodi	Director of the Master of Accounting Program Mason School of Business
Carlane J. Pittman '03	Director of the MBA Program Mason School of Business
Susan C. Hughes	Director of the Executive MBA Program Mason School of Business
Christopher P. Adkins	Director of the Undergraduate Program Mason School of Business
Rosanna Koppelmann	Director of Center for Corporate Education and Flex Program, Mason School of Business
Amanda Barth	Director of MBA Admissions Mason School of Business
Peggy Gesing	Director of MBA CareerPREP Mason School of Business
Kathryn P. Butuceanu	Director of Administration Mason School of Business
Andrea Sardone	Chief Marketing Officer Mason School of Business
Charlotte D. Brown	Director of Business Library Mason School of Business
Kimberly A. Sperling	Director of Development Mason School of Business
Davison M. Douglas	Dean and Chancellor Professor of Law William & Mary School of Law
Eric A. Kades	Vice Dean and Chancellor Professor of Law William & Mary School of Law
Ron Rosenberg	Associate Dean for Academic Affairs and Professor of Law William & Mary School of Law
I. Trotter Hardy	Associate Dean for Technology and Professor of Law William & Mary School of Law
James S. Heller	Director of the Law Library and Professor of Law William & Mary School of Law

Lizbeth A.S. Jackson	Associate Dean for Administration William & Mary School of Law
Chris B. Creech	Associate Registrar William & Mary School of Law
Robert E. Kaplan	Associate Dean for Career Services/Director, Externships William & Mary School of Law
Sarah F. Kellam	Associate Dean for Development and Alumni Affairs William & Mary School of Law
Terri T. Lorincz	Chief Financial Officer/Controller, Law School Foundation William & Mary School of Law
Faye F. Shealy	Associate Dean for Admission William & Mary School of Law
Virginia L. McLaughlin ’71	Dean and Chancellor Professor of Education School of Education
Thomas J. Ward	Associate Dean for Academic Programs School of Education
Dorothy S. Osborne	Assistant Dean for Admissions, School of Education
Christopher Gareis	Associate Dean for Teacher Education/Professional Services, School of Education
Ronald Hoffman	Director, Omohundro Institute of Early American History and Culture
Carrie Cooper	Dean of University Libraries
Edward P. Irish	Director, Student Financial Aid
Sara L. Marchello	University Registrar
Patricia M. Volp	Dean of Students
Mark Constantine	Assistant Vice President for Student Affairs
W. Franchon Glover ’99	Asst to the President for Diversity and Community Initiatives
Deborah Boykin ’76	Assistant Vice President for Student Affairs and Director, Residence Life
Warrenetta C. Mann	Director, Counseling Center
Vernon J. Hurte	Director, Center for Student Diversity
Linda Knight	Director, Recreational Sports
Virginia Wells	Director, Student Health Services
Mary Schilling	Director, Career Center
Robert Knowlton	Director, Sadler Center/Campus Center

College Calendar

FALL SEMESTER 2011

July 29-August 23	Registration of New Graduate Students (Friday-Tuesday)
August 24	Beginning of Classes: 8 a.m. (Wednesday)
September 2	Last day to add/drop courses (Friday)
September 30	Last day to file Notice of Candidacy with Registrar for May or August 2012 graduation (Friday)
October 8-11	Fall Break (Saturday-Tuesday)
October 28	End of ninth week of classes (Friday)
November 23-27	Thanksgiving Holiday: 8 a.m. Wed - 8 a.m. Mon
December 2	End of Classes: 5 p.m. (Friday)
December 3-4	Reading Period (Saturday-Sunday)
December 5-9	Examinations (Monday-Friday)
December 10-11	Reading Period (Saturday-Sunday)
December 12-14	Examinations (Monday-Wednesday)
December 9	Last day to submit theses and dissertations for January 2012 conferral of degrees (Friday)
January 13	January Graduation Date (Friday)

SPRING SEMESTER 2012

January 5-17	Registration of New Graduate Students (Thurs-Tuesday)
January 18	Beginning of Classes: 8 a.m. (Wednesday)
January 27	Last day to add/drop courses (Friday)
March 3-11	Spring Break (Saturday-Sunday)
March 16	End of ninth week of classes (Friday)
April 20	Last day to submit theses and dissertations for May 2012 Commencement (Friday)
April 27	End of Classes: 5 p.m. (Friday)
April 28-29	Reading Period (Saturday-Sunday)
April 30-May 4	Examinations (Monday-Friday)
May 5-6	Reading Period (Saturday-Sunday)
May 7-9	Examinations (Monday-Wednesday)
May 13	Commencement (Sunday)

SUMMER SESSIONS 2012

May 29	Beginning of First Session (Tuesday)
June 29	End of First Session (Friday)
July 3	Beginning of Second Session (Tuesday)
July 6	Last day to file Notice of Candidacy with Registrar for January 2013 graduation (Friday)
July 20	Last day to submit theses and dissertations for August conferral of degrees (Friday)
August 3	End of Second Session (Friday)
August 17	August Graduation Date (Friday)

NOTE: Additional dates and deadlines of importance can also be found on the Academic Calendars & Exam Schedules pages of the University Registrar's web site www.wm.edu/registrar. Calendar dates may be subject to change.

MESSAGE FROM THE DEAN

We welcome you to the College of William & Mary and encourage you to explore the wealth of opportunities offered here. The College of William & Mary is unique in providing the expertise and opportunities of a major research university along with the faculty mentoring and commitment to teaching found at a small liberal arts college. Our faculty and graduate students are top-notch scholars drawn to William & Mary by our supportive collegial atmosphere and our dedication to excellence in mentoring as well as excellence in research. Arts & Sciences graduate programs are enhanced by internships, apprenticeships, and interdisciplinary study at a number of nearby world-class research facilities. Whether you have already joined the William & Mary community or are a prospective student, we invite you to browse this catalog and our web pages (http://www.wm.edu/as/graduate/) as you take this next exciting step into the future.

Best wishes for continued success,

S. Laurie Sanderson, Dean
Office of Graduate Studies and Research

GRADUATE PROGRAMS IN ARTS AND SCIENCES

The Faculty of Arts and Sciences offers programs leading to the following degrees:

- Master of Arts. American Studies, Anthropology, Biology, Chemistry, History, and Psychology.
- Master of Science. Applied Science, Biology, Chemistry, Computer Science (including specializations in computational operations research and computational science), and Physics.
- Master of Public Policy.
- Doctor of Philosophy. American Studies, Anthropology, Applied Science, Computer Science (including a specialization in computational science), History, and Physics.
- Joint Degrees. M.A. in American Studies/J.D. from the School of Law.
  M.S. in Chemistry/Ph.D. in Applied Science.
  M.P.P./J.D. from the School of Law.
  M.P.P./M.B.A. from the Mason School of Business.
- Concurrent Degrees. M.P.P./M.S. in Computational Operations Research. M.P.P./M.S. or M.P.P./Ph.D. in Marine Science.

William and Mary's other graduate and professional schools offer programs leading to the following degrees:

- School of Law. J.D. and LL.M. in the American Legal System.
- Mason School of Business. Full-time M.B.A/Flex M.B.A., Executive M.B.A., M.Acc.
- School of Education. M.Ed., M.A.Ed., Ed.S., Ed.D., Ph.D.
- School of Marine Science. M.S. and Ph.D. Marine Science.
- Joint Degrees. J.D./M.B.A., M.B.A./M.Acc., M.B.A./M.G.M. (Mason School of Business and the Thunderbird School of Global Management).

Graduate Studies Advisory Board

The Graduate Studies Advisory Board is a group of educational, corporate, and community leaders with a commitment to enhancing the quality of graduate education in Arts & Sciences at William & Mary.

The missions of the Graduate Studies Advisory Board are:

- Development/fundraising to increase graduate Arts & Sciences financial resources
- Assisting in the building of a graduate Arts & Sciences community
- Enhancing professional development opportunities for graduate students
- Advocating for graduate Arts & Sciences within the W&M community

By sponsoring the Graduate Research Symposium, funding the Distinguished Thesis/Dissertation Awards in Arts & Sciences, and providing recruitment fellowships to outstanding entering graduate students, the Graduate Studies Advisory Board is playing a vital role in advancing William & Mary's graduate programs in Arts & Sciences.

See www.wm.edu/as/graduate/gradadvisoryboard/index.php for more information.

Student Services

Dean of Students Office

Dr. Patricia M. Volp, Dean of Students
Campus Center, Room 109, 221-2510
Web site: http://www.wm.edu/deanofstudents/

The Office of the Dean of Students assists all students, graduate and undergraduate, from their initial orientation to the College through successful completion of their academic and personal goals. The Dean of Students is an advocate for student needs and acts as liaison between students and academic departments. Staff members provide learning assistance counseling and workshops for students who are interested in boosting their time management and study skills. Disability Services for permanent or temporary disabilities are coordinated within this office (see Disability Services section). In addition, members of the staff work with students who are experiencing unexpected or difficult circumstances that may result in a need for a medical leave or mid-semester withdrawal.

The Dean's office is responsible for managing all violations of the Code of Student Conduct and for training and advising the graduate and undergraduate Honor Councils. Staff members are available to discuss the community's standards, the systems by which they are enforced, or concerns related to the conduct of students or student groups. Any member of the community may submit reports about student conduct to this office. The Dean of Students Office publishes the Student Handbook, which includes statements of rights and responsibilities for all students. Information about other services available to students also is included.

Disability Services

Disability Services strives to create a comprehensively accessible living and learning environment to ensure that students with disabilities are viewed on the basis of ability by considering reasonable accommodation on an individual and flexible basis. The decision to request accommodation is voluntary and a matter of individual choice. Students seeking

accommodation are strongly encouraged to notify the College and submit all supporting documentation early to allow adequate time for planning.

Documentation of Disability

In general, documentation should not be older than three years from the date of the first accommodation request and is expected to demonstrate the impact of disability upon major life activities and to support all recommended accommodations. As appropriate to the disability, the College expects documentation to meet specified guidelines.
Please refer to the Disability Services web site for more information concerning these specific documentation guidelines. Documentation of disability is confidential will not be released without the student's written consent.

For more information, please contact:

Lisa Colligan, Director and Assistant Dean of Students
Campus Center, Room 109
P.O. Box 8795
Williamsburg, VA 23187-8795
757-221-2510
757-221-2538 FAX
E-mail: lbcoll@wm.edu;
Web site: http://www.wm.edu/deanofstudents/disable/

Ombuds Office

Graduate Studies and Research, Arts and Sciences
Elizabeth Barnes, Ombudsperson
Tyler Hall 334; 221-3927
E-mail: elbarn@wm.edu
Web site: http://www.wm.edu/as/graduate/ombuds/index.php

The Ombuds Office is a confidential venue for Arts & Sciences graduate students seeking information or answers to questions about graduate education, and for those students seeking to raise a concern or discuss a problem regarding graduate studies in Arts and Sciences.

Call for the Ombudsperson's office hours, as they will vary by semester. Students may come by during the set office hours, but it is recommended that they make an appointment. When necessary, the Ombudsperson will make special arrangements to see a student outside of normal business hours.

Student Health Center

Dr. Virginia Wells, Director
Appointment Line 221-2998; Front Desk 221-4386
E-mail: sthlth@wm.edu
Web site: http://www.wm.edu/health

The Student Health Center provides high-quality, primary medical care for students becoming ill or experiencing minor emergencies while away from home. The Health Center delivers a wide variety of services, many of which are covered by the Student Health Fee included in the Tuition and General Fee. All matters between a student and the Health Center staff are confidential and, except in the case of life-threatening situations, medical

emergencies, severe emotional or psychological distress, or when required by law, will not be released without the student's written consent.

Virginia State law requires all full-time students enrolling for the first time in a four-year public institution to provide a health history and an official immunization record. The College of William and Mary further requires ALL full-time students (including previously matriculated students) to submit a physical examination performed within the twelve months preceding the student's enrollment or re-enrollment, as well as providing documentation of meeting the same immunization requirements. Previously enrolled students re-entering as full-time students after an absence from campus of greater than 10 years, must also revalidate their immunization record. This information MUST be submitted on William and Mary's Health Evaluation Form; faxes or photocopies will not be accepted.

Medical services are provided for all full-time students and for those graduate students certified by the Dean of their school to be doing the 'equivalent of full-time work'. In order to be eligible for medical care both groups of students must have paid the Student Health Fee for the current semester and have met the Health Evaluation Form requirements including a physical examination and submission of an official immunization record.

Students choosing to seek care at an off campus site are responsible for charges incurred. Likewise, if a Health Center provider deems it medically necessary to refer a student to an off campus specialist, this also becomes the student's financial responsibility. Students are strongly encouraged to carry health insurance to assist with the cost of health care.

Students experiencing severe emotional or psychological distress, making a threat or gesture of suicide, or attempting suicide, will be evaluated by the College's medical/emotional emergency response team and appropriate measures instituted. Anyone having knowledge of such circumstances should immediately contact the Dean of Students @221-2510, or the Student Health Center @221-4386.

The Student Health Center is located on Gooch Drive, south of Zable Stadium. Hours of operation are Monday, Tuesday, Thursday, and Friday 8:00 a.m. to 5:00 p.m.; Wednesday 10:00 a.m. to 5:00 p.m.; and Saturday 9:00 a.m. to 1:00 p.m. (triage only) when school is in session. During the summer and intersessions the hours of operation are Monday, Tuesday, Thursday and Friday 7:45 a.m. to 4:00 p.m.; Wednesday 10:00 a.m. to 4:00 p.m. Appointments with physicians and nurse practitioners may be scheduled by calling 221-2998.

Counseling Center

Dr. Warrenetta C. Mann, Director
Blow Memorial Hall, Suite 240; 221-3620
Web site: http://www.wm.edu/counselingcenter/

The Counseling Center offers a range of brief psychological and counseling services for William and Mary students in order to address psychological issues, personal concerns, interpersonal issues, and crisis intervention. Staff members are available to discuss any important personal concerns a student may be facing and work with that student to provide resources to address those concerns.

The staff of the Counseling Center consists of both male and female mental health professionals, including psychologists, counselors, and social workers. A sport psychologist is available for students interested in learning how to enhance their athletic or academic performance. Psychiatric consultation is available through referral to the Student Health Center. All staff are trained and experienced in dealing with the problems of university students. Students are initially seen for an initial assessment. Follow up services are determined according to the needs of each individual student. Individual, couples, family,

or group sessions offered at the counseling center are provided at no additional cost to the student. If appropriate, a student may be referred to other sources of help after an initial evaluation.

Counseling is confidential. Therapy is most effective when a student can be direct and honest with a counselor without fear that personal information will be divulged. Information about a student is not released without that student's written permission, except in accordance with the laws and ethics governing our profession. Notations of counseling are not a part of a student's College educational record.

Appointments may be made by calling the Counseling Center at 221-3620, or by coming to the office in person. Office hours are 8 a.m.-noon and 1p.m.- 5p.m., Monday through Friday. Emergency services during the fall and spring semesters are also available after hours and on weekends by calling the Campus Police at 221-4596 and asking to speak with the Counseling Center 'on-call' counselor.

GRADUATE REGULATIONS

I. Organization of Graduate Programs

Graduate studies in Arts and Sciences at the College of William and Mary are under the overall jurisdiction of the Committee on Graduate Studies (COGS), composed of representatives of the departments and programs offering graduate degrees, and of the graduate committees of the individual departments and programs. Most administrative matters require the approval of the Dean of Graduate Studies and Research, Arts and Sciences.

II. Admission

Application Fee

A non-refundable processing fee of $45 is required for application for admission to graduate study in Arts and Sciences. This fee is not credited to the student's account. There is not an application fee for admission as a non-degree seeking (post-baccalaureate) student.

Procedure

The online application procedure can be found by visiting http://www.wm.edu/as/graduate/howtoapply.php.

Additional information about admission to graduate study should be requested from the director of graduate studies in the department/program to which the applicant intends to apply. Beginning graduate students may enter in the fall, spring, or summer session of each year at the discretion of the department/program committee. Applicants should be aware that deadlines for submitting the application package vary with the individual departments/programs. Students should consult the department/program of his or her interest for its application deadline or refer to the website, http://www.wm.edu/as/graduate/deadlines.php. Degree-seeking applicants may be admitted as regular or provisional graduate students. Non-degree seeking applicants should apply as non-degree seeking (post-baccalaureate) students through the Office of the University Registrar.

Each student applying for admission must submit scores on the verbal, quantitative, and analytical sections of the GRE. Applicants must request ETS to send GRE scores directly to the department/program to which they are applying. In addition, some departments/programs require prospective students to include scores on the subject portion of the test. There must be no more than five years between the William & Mary term that the test was taken and the William and Mary term in which the application is submitted. GRE information bulletins with test registration forms may be obtained by visiting the web site, http://www.gre.org or calling 609-771-7670.

The TOEFL is required for all students for whom English is not a first language. Applicants must request ETS to send TOEFL scores direclty to the department/program to which they are applying. Information for the TOEFL can be found at http://www.ets.org/toefl. Inquiries about specific admissions requirements may be addressed to the department/program of interest.

A student can be enrolled in only one graduate program in A&S, unless the programs are listed at the front of this catalog as joint or concurrent degree programs. Exceptions require written approval from the Dean of Graduate Studies and Research and the Directors of Graduate Studies for both degree programs. In general, exceptions will only be approved for students who have completed all of the coursework required for one of the A&S degree programs. A student cannot receive stipend or tuition funding simultaneously from more than one W&M degree program, unless the degree programs are listed as joint or concurrent at the front of this catalog.

Regular Graduate Students: For admission as a regular graduate student an applicant must have completed the requirements for a bachelor's degree at an accredited institution, must have a cumulative grade point average of 2.5 or more on a 4.0 scale, and must have the recommendation of the department/program committee in which he or she intends to study for a degree. Note: Students may apply to W&M prior to receiving their bachelor's degree. However, admission to the A&S graduate program is conditional upon submission to the Office of Graduate Studies and Research of final official transcript(s) or Marks statement/transcript and degree/graduation certificate (where relevant for international students) in the institution's sealed envelope, confirming that a bachelor's degree has been conferred. If students have indicated on their application to W&M that a Master's degree from another institution has been conferred or is pending, admission to W&M is also conditional upon submission of the above official documents confirming that a Master's degree has been conferred.

Provisional Graduate Students: Applicants with less than a 2.5 cumulative grade point average may be admitted as provisional graduate students upon the recommendation of the department/program committee.

All recommendations for admission, except for non-degree seeking students, must be approved by the Dean of Graduate Studies and Research, Arts and Sciences. No student will be admitted later than one month before the start of the semester. Because of the time required to process visa applicants, no foreign student may be admitted later than three months before the start of the semester.

Non-Degree Seeking (Post-Baccalaureate) Students: In special circumstances, individuals who wish to take graduate courses in Arts and Sciences (courses numbered 500 or above) but are not considered degree-seeking students may be allowed to apply to the College as a non-degree seeking (post-baccalaureate) student. For application information, see the University Registrar web page. Prospective non-degree seeking students must present evidence to the Office of the University Registrar that they have earned a bachelor's degree from an accredited institution. Prospective students should also contact the department/program of interest for consideration. Only individuals who have been approved by the department/program will be allowed to register. Generally, non-degree seeking students must present academic or other credentials comparable to those of regularly admitted students. Non-degree seeking students must reapply each semester.

Transfer of Graduate Credit

On the recommendation of the student's major department/program committee and with the approval of the Dean of Graduate Studies and Research, a regular student may transfer up to six hours of graduate credit earned at another accredited institution of higher learning and apply these six credits toward the credits needed for an advanced degree at William and Mary. The credits must have been earned in courses appropriate to the student's program at William and Mary, must fall within the time specified by the general College requirements for degrees, and cannot have been used by the student to satisfy any undergraduate or graduate degree requirements. An official transcript must be provided to the Office of Graduate Studies and Research. Credit may be transferred only for courses in which the student received a grade of B or higher and will not be counted in compiling his or her cumulative grade point average at William and Mary.

Granting Graduate Credit for W&M Graduate-Level Courses Taken by Non-Degree Seeking or Undergraduate Students

No graduate-level credits earned as an undergraduate or non-degree seeking student at the College of William and Mary can be used to meet the requirements for a W&M graduate degree without written approval from the department's/program's graduate

committee and the Dean of Graduate Studies and Research after the student has been admitted to the graduate program.

With written approval from the department's/program's graduate committee and the Dean of Graduate Studies and Research, an admitted graduate student may apply toward an advanced degree at William and Mary part or all of the graduate-level credit earned at William and Mary as an undergraduate or non-degree seeking student. The credits must have been earned in courses appropriate to the student's graduate program at William and Mary and cannot have been used by the student to satisfy any undergraduate degree requirements unless the student has been admitted to an approved accelerated degree path (see Public Policy section of catalog). Credit can be considered for acceptance only for courses in which the student received a grade of C or higher. If the course was repeated as a non-degree seeking or undergraduate student at W&M, the department's/program's graduate committee and the Dean of Graduate Studies and Research may choose to accept either the most recent grade or to calculate the graduate student's quality point average and cumulative grade point average at W&M using both the original grade and the grade earned in the repeated course. For the purposes of the College's time limits for meeting degree requirements, the semester of matriculation in the W&M graduate program will serve as the starting date for non-degree seeking or undergraduate credit that has been converted to graduate credit.

III. Tuition and Fees

The College reserves the right to make changes in its charges for any and all programs at any time, after approval by the Board of Visitors. The tuition, technology and general fee for graduate students in Arts and Sciences who register for nine semester hours of credit or more per semester is $5,481.00 per semester for residents of Virginia and $12,416 per semester for non-residents. Any student registered for nine hours or more per semester for any course level (graduate or undergraduate courses) is considered to be a full-time student and will be charged these full-time rates unless qualified to be a Research Graduate Student (see below).

Tuition for part-time students, at the graduate level, is as follows:

$ 365.00 per semester hour for residents of Virginia

$ 985.00 per semester hour for non-residents

Degree-seeking graduate students will be charged the part-time rates for part-time work (eight hours or less per semester) based on their established domiciliary status. (See the discussion in Sec. VII of this catalog for a statement regarding in-state, out-of-state classification for tuition.) Full-time non-resident degree-seeking graduate students who hold qualifying assistantships may, on the recommendation of the Dean of Graduate Studies and Research and approval of the Provost's Office, pay tuition at the resident rates. Rates for students who enroll in Summer Session will be charged on the same basis. Full-time enrollment in the summer is defined as a total of three hours or more in one summer session or in any combination of summer sessions, and half-time enrollment is defined as two hours.

Part-time students who are not enrolled as degree-seeking students at the College of William and Mary (non-degree seeking post-baccalaureate students), must complete the "Application for Virginia In-State Tuition Privileges" to determine eligibility for in-state tuition. Students determined to be domiciled outside of Virginia will pay out-of-state rates. Those determined to be residents will pay according to the in-state rates.

Charges for part-time students to audit courses are the same as courses taken for credit.

Transcript Fees: There is a $7 fee for each transcript requested. No transcripts will be released until ALL financial obligations to the College are satisfied.

Research Graduate Students

Upon the recommendation of a student's department/program and approval of the Dean of Graduate Studies and Research, a student's eligibility for Research Graduate status can be established if the following conditions are met:

- The student has completed all required course work.
- The student is not employed significantly in any activity other than research and writing in fulfillment of degree requirements.
- The student is present on the campus or is engaged in approved field work.

While classified as a Research Graduate, a student should register for 12 credit hours per semester or 6 credit hours in the summer of either the Research, Thesis, or Dissertation course for which payment of the part time rate of one credit hour is required.

A Research Graduate student is not eligible for services that are paid for by fees (e.g., student health, and recreational center) unless the fee is paid. Research Graduate students may take courses other than Research, Thesis, or Dissertation only if payment for additional tuition has been made.

IV. Financial Aid

Graduate assistantships, scholarships, and fellowships are available in many departments/programs for full-time regular (not provisional) graduate students. For details, applicants should write to the department/program. Application for aid should be made on the application form for admission to graduate study. Awards are made on the basis of merit. Graduate assistants work from five to twenty hours a week during the academic year or the summer depending upon the stipend awarded. They must satisfactorily carry out the duties assigned by their departments/program committees, must make satisfactory progress in their degree programs as defined by the College degree requirements and the regulations of their departments or program committees, and may not hold any other employment or appointment of a remunerative nature during the term of their assistantships without approval of the Dean of Graduate Studies and Research. Failure to comply with these conditions will lead to revocation of appointments. Approval from the Dean of Graduate Studies and Research for additional employment/appointment of a remunerative nature will be based on supporting written statements from the student's thesis/dissertation advisor and Director of Graduate Studies that the additional employment is not anticipated to adversely affect the student's progress toward the degree. Such approval does not imply exemption by the Internal Revenue Service from Social Security and Medicare taxes. To ensure that their IRS status as students is maintained, students should consult the appropriate IRS documents and/or a tax advisor. It is the responsibility of international students to understand their visa restrictions before accepting on-campus or off-campus employment.

Summer stipend or fellowship funds administered through the Office of Graduate Studies and Research will not be approved for payment to new domestic graduate students (i.e., domestic students who have not been previously enrolled in their W&M graduate program) during the summer sessions (approximately June 1 - August 1) unless the student has been officially admitted to the W&M graduate program for the summer and is enrolled in a W&M summer course for zero or more graduate credits.

New international W&M graduate students who are required by their department to arrive more than 30 days before the first day of class must be admitted and enrolled as full-time W&M graduate students during the summer.

Fellowships and scholarships will be revoked if students fail to make satisfactory progress toward their degrees or fail to register as full-time students. Graduate assistants are

normally paid in equal installments (minus deductions for federal and state withholding taxes and applicable federal social security taxes) on the first and sixteenth of each month. The portion of a graduate fellowship or scholarship applicable to a semester is initially applied to payment of tuition for that semester. Any amount remaining after payment of tuition may be refunded to the student. Students wishing to apply to student loans and work-study should submit the Free Application for Federal Student Aid (FAFSA) by February 15 (new students) or March 15 (returning students). Award letters will be sent in June. For more information, write to aid@wm.edu or visit the Financial Aid web site at http://www.wm.edu/financialaid/gradstudents.php.

Financial Benefits for Veterans

Programs for Federal and State beneficiaries are available to eligible graduate students who attend the College. The Department of Veterans Affairs offers several programs to help veterans, active duty and dependents pay for their education including the Post 9-11 and Montgomery GI Bills as well as the Virginia Military Survivors and Dependents Education Program. It is the student's responsibility to decide which benefit is most appropriate for him/her based on individual circumstances and then apply to VA to use benefits through their website at www.gibill.va.gov. Students who receive educational benefits from the Department of Veterans Affairs are ultimately responsible for all charges assessed by the College of William and Mary.

Questions about VA programs and the benefits process at W&M can be addressed to the Office of the University Registrar (757 221-2800 or vabenefits@wm.edu).

Waiver for Senior Citizens

Under the provisions of the Senior Citizens Higher Education Act, free tuition is available for senior citizens (persons 60 years of age or older) provided that they are residents of Virginia, have a taxable income that does not exceed $15,000 per year, have met the graduate admission standards of the program or department, and space is available. In addition, any Virginia resident aged 60 or over in any one semester can enroll in 3 non-credit courses free of tuition without regard to income, provided space is available and the individual meets the admissions standards of the College. If the senior citizen has completed 75% of the requirements for the degree, the provision regarding the availability of space does not apply. A Senior Citizen Exemption Certificate is required for anyone who wishes to use the waiver. More information about the Senior Citizen Certificate is located on the following website http://www.wm.edu/offices/registrar/forms/index.php. Individuals wishing to enroll under provisions of this Act should apply to the Dean of Graduate Studies and Research, Arts and Sciences.

V. Registration

Registration for Graduate Credit

All regular and provisional graduate students admitted to a course numbered 500 or above shall receive graduate credit upon satisfactory completion of the course. Regular or provisional graduate students will be allowed to register for graduate credit in courses in Arts and Sciences numbered 300 through 499 provided they submit the appropriate form with the approvals of the instructor, the student's graduate director, and the Dean of Graduate Studies and Research, prior to registration. Graduate credits will be awarded only upon successful completion of the course with a grade of C (quality points =2.0) or better.

With the approval of the Committee on Graduate Studies, 500 level and 600 level graduate courses may be cross-listed with 300 or 400 level undergraduate courses. Under

no circumstances may any student receive credit for both the undergraduate level and graduate level versions of the same cross-listed course.

Changes in Registration

The last day for students to make changes to their course registration will be the last day of the add/drop period (as defined in the calendar on page vi). Changes in students' schedules after the last day of the add/drop period will be initiated through the student's graduate director using an Add/Drop/Withdrawal form which can be obtained on the web at http://www.wm.edu/as/graduate/studentforms.php and requires the approval of the instructors involved, the student's graduate director, and the Dean of Graduate Studies and Research. If the student drops a course or courses before the end of the ninth week of classes but remains registered for other academic work, the course or courses dropped will be removed from the student's record. If the student withdraws from a course or courses after the end of the ninth week of classes through the last day of classes, but remains registered for other academic work, the grade 'W' or 'F' will be awarded by the instructor in the course depending upon whether or not the student was passing at the time of the withdrawal. If the student withdraws from the College before the end of the ninth week of classes, a grade of 'W' will appear on the record for each course in progress at the time of withdrawal. After the end of the ninth week of classes through the last day of classes, students who withdraw from the College will be awarded a 'W' or 'F' by the faculty member teaching each course in progress at the time of withdrawal.

Students may not withdraw from a course after the last day of classes. If for medical reasons a student does not complete a course, 'WM' will be entered on the record upon approval of the Dean of Students and the Medical Review Committee. For further information see 'Medical Withdrawals/Leaves of Absence' in Section VI below. See Section VII for regulations governing refunds of tuition and fees.

Continuous Enrollment

This policy allows students to maintain active status with the College and to access College resources, including the libraries, email, laboratories, the Counseling Center, and the Recreation Center, upon payment of the appropriate fees. The services of the Student Health Center are not available to part-time students and students with Continuous Enrollment Status. Additionally, this policy is designed to enhance faculty mentoring and encourage student degree completion within the time limitations specified by the graduate programs. The continuous enrollment policy does not apply to students who have been officially granted a planned leave of absence or a medical withdrawal.

All full-time and part-time degree-seeking graduate students must maintain continuous enrollment during all fall and spring semesters. With prior approval from the department/program, students in good standing can remain active in their degree program with Continuous Enrollment Status by requesting to be enrolled in GRAD 999 only and by paying the 'Continuous Enrollment' fee. The Fall/Spring 2011-2012 Continuous Enrollment fee is $100 per semester. Students must consult their department/program's specific guidelines regarding eligibility for Continuous Enrollment Status. If the deadline for degree completion has passed, registration for continuous enrollment is not sufficient to maintain good standing; the student must also request an extension (see section on Time Limits for Degrees and Extensions).

The following students are not eligible for Continuous Enrollment Status and should register as a regularly enrolled full-time degree-seeking student or as a full-time Research Graduate Student if the eligibility requirements for Research Graduate status are met: (1) students employed in a graduate student appointment (e.g., Research Assistant, Teaching Assistant, Teaching Fellow), (2) international students requiring visas, (3) students who

need to be full-time for the purpose of deferring repayment of student loans, (4) students who wish to be eligible for the College's Student Health Insurance Plan (mandatory for full-time students) and be eligible for use of the Student Health Center upon payment of the appropriate fees, and (5) students who wish to be eligible for hourly employment at the college or for financial aid requiring full-time status.

Unless granted an approved leave of absence or medical withdrawal, a graduate student who fails to register each semester has discontinued enrollment in the graduate degree program. If the student wishes to resume progress toward the degree, it will be necessary to reapply for admission to the College and to the degree program and meet any changed or additional degree requirements established in the interim. In addition, the student will owe Continuous Enrollment fees for the term(s) he/she was not enrolled.

Repeated Courses

Certain courses are specifically designated in the Graduate A&S Program Catalog as courses that may be repeated for credit. With the exception of these specifically designated courses, no course for graduate credit in which a graduate student receives a grade of (G), (I), or (P), or a grade between (A) and (D-), may be repeated except as an audit. Students are responsible for ensuring they do not register for a non-repeatable course more than once.

Auditing

Any graduate student may audit a graduate or undergraduate course with permission of the instructor and graduate director. The A&S graduate Audit form can be obtained on the web site of the Office of Graduate Studies and Research, and must be completed and submitted to the Dean of Graduate Studies and Research prior to the end of the add/drop period (as defined in the calendar on page vi). Before beginning the audit, the student and the instructor must agree on what is required for the audit to be successful. The audited course with the grade of 'O', for a successful audit, or 'U', for an unsuccessful audit, is listed on the student's official transcript.

Language Requirements

In degree programs for which there are language requirements, the individual department/program committee will determine the methods by which students will satisfy these requirements. For students who wish instruction in a language, the Departments of Classical Studies and Modern Languages recommend courses numbered 101-102 for those with fewer than two high school units in a language, 103-104 or 201-202 for those with fewer than three. Successful completion of a course at the 202 level or the equivalent is normally sufficient to pass examinations for reading knowledge.

VI. Grading and Academic Progress

Grading and Quality Points

The grades A, B, C, D, P (in certain courses), and F are used to indicate the quality of work in a course. Also used are '+' and '-' notations, except that there is no 'A+'. 'W' indicates that a student withdrew from the College before the end of the ninth week of classes or dropped a course between the end of the ninth week of classes and the last day of classes and was passing at the time that the course was dropped. For each semester credit in a course in which a student is graded quality points are awarded as shown on the following table:

A = 4	B = 3.0	C = 2.0	D+ = 1.3
A- = 3.7	B+ = 3.3	C+ = 2.3	D = 1.0
	B- = 2.7	C- = 1.7	D- = 0.7

P carries credit but is not included in a student's cumulative grade point average. F carries no credit but the hours attempted are included in the student's average. In addition to the grades listed above and 'W', the symbols 'G' and 'I' are used on the academic transcript. 'G' is a deferred grade reserved for circumstances where there is a delay in awarding a final grade that is not caused by the student. The situation is typically structural, as when a student is researching and writing his/her thesis or dissertation. The grade 'G' is temporarily assigned until the semester when the work is complete. The 'G' is not used as an alternative to 'I' when the student is the cause for the non-completion. Unlike the deferred grade 'I', 'G' does not automatically revert to 'F' after one semester.

'I' indicates that because of illness or other major extenuating circumstances the student has postponed, with the explicit consent of the instructor, the completion of certain required work. 'I' automatically becomes 'F' at the end of the next semester if the postponed work has not been completed, unless the instructor requests an extension for another semester. An 'I' may not be extended more than once without the approval of the graduate director and the Dean of Graduate Studies and Research.

Grade Review Policy

A student who believes that a final course grade has been unfairly assigned may request a review of the grade within the first six weeks of the next regular semester following that in which the grade was assigned (but see "Grade Review Policy in Case of Withdrawal below"). This review shall normally be completed by the end of that semester.

The student shall confer with the instructor of the course to discuss the grade. The student may wish to ask about such matters as the particular strengths and weaknesses of his or her course work, the general grade scale utilized by the instructor, and the relative ranking of the student's work in the class as a whole.

If the issue remains unresolved the student may, within the first six weeks of the next academic semester for which the grade was received, present a written statement requesting a further review and giving a full explanation of the reasons for the request. The written statement shall be sent to the instructor, the graduate director, and the chair of the department/program in which the course was taught, and the Dean of Graduate Studies and Research shall be notified. If the course is cross-listed in two or more departments/programs, the chair of the faculty member's home department will be the one to receive the written statement. If the grade in question was given by the department chair or program director, the student will ask the Dean of Arts & Sciences to appoint another faculty member of the department/program to oversee the further review process. Unless the chair or director (or faculty member appointed by the Dean, in cases where the grade in question was given by the chair or director) decides the student's case is wholly without merit, he or she will discuss the matter with the instructor and seek to resolve the issue. This part of the review process should be completed within three weeks of receipt of the written statement by the student.

If the student is not satisfied with the outcome of the above procedure, he or she may appeal to the Dean. Unless the Dean decides the student's case is wholly without merit, he or she will ask the chair or director (or faculty member appointed by the Dean, in cases where the grade in question was given by the chair or director) to appoint a committee of at least three faculty members of the department/program who will review all relevant and available materials supplied by the student, the instructor, or other individuals. Both the student and the instructor have the right to meet with the committee.

After reviewing the matter, the committee shall decide if it believes the grade should be changed, and if so, what the proper grade should be. It shall inform the instructor and the student of its conclusions in writing and, if it believes the grade should be changed, recommend that the instructor change the grade accordingly.

If the instructor refuses to accept the committee's recommendation and the committee believes that the faculty member is acting inappropriately in assigning the grade, the committee may appeal to the Dean of Arts & Sciences. The Dean's decision to accept or reject the committee's recommendation shall be final.

Grade Review Policy in the Case of Withdrawal

In the case when an Arts and Sciences graduate student's grade(s) will result in withdrawal due to academic deficiency as specified by the regulations of the student's department/program, a review of the grade (see Grade Review Policy above) may be requested in writing by the student only within the week following the grading deadline for the semester when the grade was assigned or the submission of the grade by the instructor, whichever is later. The grade review must be completed prior to the first class day of the spring term (for review of fall grades submitted in the fall term), the first class day of the first summer session (for review of spring grades submitted in the spring term), or the first class day of the fall term (for review of summer grades submitted in the summer term). In the case of an Incomplete that is later changed to a grade, the grade review must be completed within two weeks of the grade review request. The timeline for the grade review will be shortened as needed to complete the grade review on schedule. The student will be withdrawn if the grade review does not result in a change of grade.

If the grade(s) will result in withdrawal due to academic deficiency and the student is receiving an assistantship or fellowship that is administered through the Office of Graduate Studies and Research, it is the responsibility of the department/program to request that the payments be terminated by the Office of Graduate Studies and Research at the end of the pay period during which the grading deadline fell or during which the deficient semester grade(s) were submitted by the instructor, whichever is later. Submission of a grade review request will not affect termination of the stipend. If the grade review results in a change of grade and consequently the student is not withdrawn, the assistantship or fellowship will be reinstated in full to include any payments not made after the original grade was received.

If the grades(s) will result in withdrawal due to academic deficiency and the student is receiving payment of tuition through the Office of Graduate Studies and Research, the tuition payment for the subsequent term will be withheld or rescinded. Submission of a grade review request will not affect termination of the tuition payment. If the grade review results in a change of grade and consequently the student is not withdrawn, the tuition payment will be reinstated in full.

Satisfactory Progress

To continue in a program, a student must make satisfactory progress toward the degree, as defined by the Committee on Graduate Studies (COGS) and the regulations of the student's department/program. If the faculty of a department/program determines that satisfactory progress is not being made, a student may be required to withdraw due to academic deficiency.

Time Limits for Degrees and Extensions

Students should complete their thesis/dissertation within a specified time limit. The time allowed is defined in this catalog in the section 'Requirements for Degrees', with further information provided in the individual program descriptions. A student who will be unable to meet this deadline must file for an extension before his or her time has expired. It is the students' responsibility to discuss this matter with their advisor and graduate director and to be aware of the relevant deadlines. Extensions will be granted

for a period of approximately one year from the date of expiration as determined by the Dean of Graduate Studies and Research and COGS (Committee on Graduate Studies). If the student's time expires during the months of June through November, the student must file for an extension before the time expires or by November 15th (whichever is earlier) for the December graduation of the following year. If the student's time expires during the months of December through May, the student must file for an extension before the time expires or by April 15th (whichever is earlier) for the May graduation of the following year. Any subsequent extension that is approved will begin on the day after the previous extension expires.

A first extension request must include a written justification from the student, with supporting letters from the student's advisor and graduate director. A first extension request is filed with the Dean of Graduate Studies and Research. The Dean's decision is reported to COGS. Students may appeal a negative decision to COGS. All subsequent extension requests are filed with the Dean of Graduate Studies and Research who will direct them to COGS, which will make the decision. The request must include all of the material from previous extensions, updated letters of support from the student's advisor and graduate director, a summary of the current state of the student's thesis/dissertation, and a plan for its completion. Extension decisions by COGS are final.

Leaves of Absence (Non-Medical)

The Dean of Graduate Studies and Research may grant leaves of absence (non-medical), upon the recommendation of the student's advisor and Director of Graduate Studies. Students must consult their department/program policy to determine whether leave can be granted for extenuating circumstances such as personal situations that temporarily interfere with the student's ability to continue, pregnancy, or extensive employment. Medical leaves of absences or medical withdrawal [due to physical or psychiatric conditions] should be requested through the Dean of Students office (see Medical Withdrawals/Leaves of Absence below).

Leaves of absence (non-medical) shall be granted for one semester or one year. A student who requests an extension of a current leave of absence shall have the request considered as a new request. Students approved for a leave of absence will have their time limit for degree completion requirement stopped for the duration of the approved leave period. Upon return from approved leave, the student's time limit to degree completion count will resume. While on an approved leave of absence, students remain in good standing but are not registered for courses or for continuous enrollment status. If you are a Virginia resident, you must submit an "Application for Virginia In-State Tuition Privileges" before you return to classes prior to registration, even if you have already submitted the application previously.

To request a leave of absence (non-medical), students will be required to complete and submit the Arts and Sciences Application for Leave of Absence Form to the Dean of Graduate Studies and Research at least 30 days prior to the leave request date. Students should consult with their department/program for additional information on post-leave stipend eligibility.

Medical Withdrawals/Leaves of Absence

A request for a medical withdrawal or a medical leave of absence for one or more semesters is appropriate in circumstances where a student has a serious physical or psychiatric condition that prevents him or her from being able to carry out his or her academic responsibilities. Maternity leave may be taken as a medical withdrawal/leave of absence if the student elects to do so, but might also be taken as a non-medical leave of absence

(see above). Medical withdrawals/leaves of absence are handled through the Dean of Students Office. Readmission after a medical withdrawal/leave of absence requires clearance from the Medical Review Committee as well as permission from the student's academic program. For details, call the Dean of Students Office at (757) 221-2510 and request the Graduate Medical Withdrawals (Full Semester Withdrawal) information sheet. Please note that the graduate policy differs from the undergraduate policy, hence the requestor should specifically ask for the graduate information sheet.

Notice of Candidacy for Graduation

Candidates for advanced degrees must submit a Notice of Candidacy for Graduation to the University Registrar by its deadline date which can be found in the College Calendar contained in this catalog. Once the student determines that they are unable to complete requirements by the specified graduation date, they must cancel the notice as soon as possible and resubmit for another graduation date.

Academic Conduct in Scholarly Activity or Research

At the College of William & Mary, honesty and integrity of students and faculty members are paramount in the conduct and dissemination of research and scholarly and creative activity; this responsibility extends to documentation prepared for the purpose of securing assistance in the pursuit of scholarly activity or research. It is the particular responsibility of individual scholars and researchers to ensure that the quality of published works is maintained: products must be carefully reviewed prior to publication; the accomplishments of others must be recognized and cited; contributors must be given full acknowledgement; co-authorship must be conferred to those, and only those, who have made a significant contribution; and all (co-)authors must be willing and able to defend publicly their contribution to the published results.

Although it may be more specifically defined by the discipline and/or in the school or department, academic misconduct is broadly defined to include fraudulent behavior such as "fabrication, falsification, plagiarism, [misappropriation,] or other practices that seriously deviate from those that are commonly accepted within [the particular scholarly community] for proposing, conducting, or reporting research [or other scholarly endeavors]. It does not include honest error or honest differences in interpretations or judgments" of results of scholarly activity.[1]

- Falsification ranges from fabrication to deceptively selective reporting and includes the purposeful omission of conflicting data with the intent to condition or falsify results.
- Plagiarism and misappropriation involve willfully appropriating the ideas, methods, or written words of another, without acknowledgement and with the intention that they be taken as one's own work, as well as the unauthorized use of privileged information (such as information gained confidentially in peer review) or the submission of similar written work to more than one course without prior approval of the current instructor or both instructors for concurrent courses.

Academic misconduct also includes material failure to comply with legal requirements governing research, including requirements for the protection of researchers, human subjects, or the public, or for ensuring the welfare of laboratory animals.

[1]United States. Office of Research Integrity. "Guidelines for Institutions and Whistleblowers: Responding to Possible Retaliation Against Whistleblowers in Extramural Research." 1995. 1 June 2008.

Institutional and Federal Compliance Requirements for Research/Teaching

Under Federal Regulations, certain classes of activity require formal review BEFORE they may be undertaken by employees or students of the College. This is true whether or not these regulated activities are funded by external money, whether or not they are performed as part of normal instruction in a classroom, lab, or practicum, whether or not they are performed on the College's grounds, and regardless of whether they are part of a formal research program or simply the result of academic curiosity on the part of a professor or student. Before graduate students can perform the following work for research/teaching, the faculty research advisor must submit a proposal to the appropriate W&M compliance committee(s) and receive written approval.

These classes of work include:

a) work involving living human subjects (including survey research or questionnaires);
b) work that uses or produces radioactive materials;
c) work that involves the use and care of vertebrate animals; and
d) work that involves recombinant DNA, or infectious agents, or direct or indirect contact with wild-caught animals that may harbor infectious agents, or any human fluid or tissue.

By law, reviews of work in any of the four categories above must be performed by duly constituted committees appointed by, and reporting to, senior administrators of the College. To enable these reviews, investigators must submit proposals to perform work involving these regulated activities. The proposals must describe the detailed, step-by-step protocols and procedures that will be used in the performance of the work. These protocols must also be updated once each year to permit continuation of the work (annual renewals are not automatic). Additionally, please note that this sort of review is required for some survey work that may be done year-after-year in scheduled classes or laboratories. Detailed descriptions of the compliance committees, along with guidance for investigators, can be found on the College's Compliance website, located within myWM, https://my.wm.edu/cp/home/displaylogin, under the Self Service tab.

W&M policy mandates that those individuals who will perform, or intend to perform, a particular activity involving these regulated areas may not judge for themselves whether that activity is exempt from formal review. Therefore, whenever you have any doubt about whether your work might require review, the correct approaches are either to submit that work through the Protocol and Compliance Management electronic submission program, or to contact a Committee Chair to discuss it.

Every A&S graduate student must provide a Compliance Committee form (not inserted into the thesis or dissertation) submitted to the Office of Graduate Studies and Research with the final original and two copies of the thesis or dissertation. The Compliance Committee form must be signed by the student and the faculty research advisor, certifying that either (1) the research does not involve the above types of research, or (2) the research has been approved by the appropriate W&M compliance committee(s).

If the graduate student's research involves the above types of activities, the final original and two copies of the thesis or dissertation must include a completed Compliance page template.

Submission of Theses and Dissertations

The copies must be prepared in accordance with 'Physical Standards for Theses and Dissertations,' which is available from the Graduate Studies office and on the web at http://www.wm.edu/as/graduate/studentresources/physicalstandards/index.php. Before inspection and approval of the final manuscripts at the Office of Graduate Studies and Research, all fees must be paid to the University Cashier. Students should consult the University Cashier or the Office of Graduate Studies and Research to determine the amount of current fees. A copy of the paid University Cashier receipt must be delivered with the three original bind-ready manuscripts to the Office of Graduate Studies and Research.

Required Fees (fee amounts are subject to change)

- Binding (3 copies), Filing Fee (Dissertation only), Copyright (Dissertation only, optional). Publishing Options – Open Access [requires additional fee] or Traditional, see http://www.il.proquest.com/dissertationagree/dissertation_publishing_agreement.pdf [page 3].
- If manuscript exceeds two inches in thickness, an additional binding fee is required for each volume.

Prepared theses and dissertations must be brought, not mailed, to the Office of Graduate Studies and Research, Stetson House, 232 Jamestown Road, for final review and approval. Manuscripts must be delivered no later than 4:00 p.m. by the deadline date listed in the College Calendar contained in this catalog for the semester of graduation. If a student cannot deliver his/her own work, then the student must arrange for someone else to deliver the manuscript by the deadline. Students are cautioned to consult their advisors well in advance to arrange a schedule that will allow submission of the thesis/dissertation by the deadline. Exceptions to the published deadline dates are allowed only with the approval of the Dean of Graduate Studies and Research. Exception requests must be submitted to the Dean of Graduate Studies and Research at least three working days prior to the published deadline dates.

Conferral of Degrees

The College confers degrees in August, January, and May of each year. The commencement ceremony is in May. Degree recipients of the previous August and January are recognized at, and invited to attend, the following May ceremony.

VII. Financial Obligations

Payment of Accounts

Charges for the tuition and general fee, as well as fees for room, meal plan, and special fees (i.e. applied music, art, kinesiology fees, etc.) must be paid by each semester due date as established by the Office of the Bursar. Any unpaid balance remaining on a student's account after the end of the add/drop period may result in cancellation of registration. Payment must be made in U.S. dollars by cash or check made payable to the College of William and Mary. Checks returned by the bank for any reason will constitute nonpayment of fees and may result in cancellation of registration. In the event a past-due account is referred for collection, the student is required to pay all costs associated with the collection and/or litigation. Credit Card payments are not accepted.

Tuition Payment Plans

To assist with the payment of educational costs, Tuition Management Systems (TMS) offers the option of an Interest-Free Monthly Payment Plan for the Fall and/or Spring semesters of the academic year. This monthly payment plan allows the student to spread expenses for tuition, room and board over a 10-month period. For more information about this plan, please write, call or logon to www.afford.com/wm:

Tuition Management Systems, Inc.
171 Service Avenue
Second Floor
Warwick, RI 02886-1020
1-800-722-4867 or (401) 921-3700

Late Payment Fee Policy

Failure to pay in full by the established due date(s) may result in the assessment of late fees/penalties in an amount up to 10% of the outstanding account balance. Semester payment due dates are established by the Office of the Bursar. For students electing to pay tuition and fees through a tuition payment plan, the payment due date is determined by the plan selected. Failure to pay by the end of the add/drop period may also result in cancellation of all classes and/or referral to an outside collection agency.

Withdrawal Schedule for a Full-time Graduate Student

Full-time students who withdraw from the College are charged a percentage of the tuition and fees based on the school week within which the withdrawal occurs. A school week is defined as the period beginning on Monday and ending on the succeeding Sunday. The first school week of a semester is defined as that week within which classes begin. Full-time students who withdraw from the College within the first school week of the semester are eligible for a refund of all payments for tuition and fees less the required enrollment deposit for entering students or a $50.00 administrative fee for continuing students.

Week	Percentage Charged	Percentage Refunded
1	0%	100%
2	20%	80%
3	30%	70%
4	40%	60%
5	50%	50%
6	60%	40%
After week 6	100%	0%

Students will not be eligible for any refund of tuition and general fees if required to withdraw by the College.

Refund of the room rent will be prorated based on the date the resident officially checks out of the room with required paperwork completed by a Resident Life staff member. Meal plan adjustments will be prorated on an actual usage basis given the last day of usage. For students paying through a tuition payment plan, all refunds will be determined by comparing the amount eligible for refunding to the total monthly payments made to date. Any outstanding amounts owed the College for tuition, general fees, dormitory fees or meal plan charges after deducting the eligible refund will be due immediately upon withdrawal.

It is College policy to hold the enrolled student liable for charges incurred, therefore in the case of refunding any overpayment, refund checks will be issued in the name of the student.

Return of Title IV

The return of Title IV funds for students with Title IV Federal Aid (Federal PELL, Federal Subsidized and Unsubsidized Stafford, Federal SEOG, Federal Work Study, Federal Perkins, Federal PLUS) who withdraw from school will be calculated in compliance with Federal regulations. A statutory schedule is used to determine the amount of Title IV funds a student has earned as of the date the student withdraws or ceases attendance.

If a student withdraws from college prior to completing 60% of a semester, the Financial Aid Office must recalculate the student's eligibility for all funds received, including Title IV funds. Recalculation is based on a percent of earned aid using the following Federal Return of Title IV funds formula:

Percent of aid earned = the number of days completed up to the withdrawal date, divided by the total days in the semester. (Any break of five days or more is not counted as part of the days in the semester.)

Funds are returned to the appropriate federal program based on the percent of unearned aid using the following formula:

Aid to be returned = (100% minus the percent earned) multiplied by the amount of aid disbursed toward institutional charges.

Keep in mind that, when funds are returned, the student borrower may owe a balance to the college. If that is the case, the student should contact the Student Accounts/Bursar's Office to make payment arrangements.

Example of Return of Funds Calculation

Example 1: Virginia resident who lives on campus (amounts used are for informational purposes only)

Institutional Charges	
Tuition	$3215
Housing	$1641
Financial Aid Package	
Pell Grant	$1500
Subsidized Loan	$1887
State Grant	$3086

The student withdraws on 10/20, which is day 57 out of 116 in the semester (57/116 = 49.1% of Title IV funds earned by the student). Title IV funds = $3387 ($1500 Pell + $1887 Sub Stafford). $3387 X 49.1% = $1663.02 of earned Title IV funds. The remainder of funds unearned $3387- $1663.02 = $1723.98 will be returned to Federal programs. The state grant will be reduced using the same formula; $3086 X 41.1% = $1268.35 earned and $1817.65 unearned.

William and Mary must return $1723.98 to the Subsidized Stafford Loan and $1817.65 of the state grant.

Example 2: Out of state student not living on campus (amounts used are for informational purposes only)

Charges	
Tuition	$10608
Financial Aid payments	
Sub Stafford	$807
Unsub Stafford	$1860
Perkins	$750
FA Grant	$9076

The student withdraws on 10/27 which is day 64 out of 116 in the semester (64/116 = 55.2% of Title IV funds earned by the student). Title IV funds = $ 3,417 ($807 Sub Stafford + $1860 UnSub Stafford +$750 Perkins Loan). $3,417 X 55.2% = $1886.18 of earned Title IV funds. The remainder of funds unearned $ 3,417 - $1886.18 = $1530.82 will be returned to Federal programs. The Financial Aid (FA) grant will be reduced using the same formula; $9076 X 55.2 % = $5009.95 earned and $4066.05 unearned.

William and Mary must return $1531 to the Unsubsidized Stafford Loan and $4066.05 of the FA grant.

Part-time Students Who Withdraw from the College

Part-time students who withdraw from the College within the first school week of the semester are eligible for a full refund of tuition and fees less a $50.00 administrative fee. After the first week, the amount of the tuition and fees to be charged will follow the full-time withdrawal schedule.

Students will not be eligible for any refund of tuition if required to withdraw from the College.

Part-time Students Who Withdraw from a Course

A part-time student who withdraws from a course after the add/drop period and remains registered for other academic work will not be eligible for a refund.

All charges by the College are considered to be fully earned upon completion of registration by the student

Outside Scholarship Recipients Receiving Credit

Students who have been awarded financial aid are required to pay the difference between the charges due and the amount of the award by the published due date each semester. The Office of the Bursar/Student Accounts must receive written notification of any outside scholarship from the organization before the credit can be given towards tuition and fees. A student whose scholarships exceed total charges may apply for a refund beginning the first day of classes.

Unpaid Accounts

If there are any outstanding debts to the College, services such as issuance of transcripts and diplomas or participation in registration or pre-registration will be withhel

Eligibility for In-state Status

To be eligible for in-state tuition, a student must meet the statutory test for domicile as set forth in Section 23-7.4 of the Code of Virginia. Domicile is a technical legal concept; a student's status is determined objectively through the impartial application of established rules. In general, to establish domicile, students must be able to prove permanent residency in Virginia for at least one continuous year immediately preceding the first official day of classes, and the intention to remain in Virginia indefinitely after graduation. Residence in Virginia for the primary purpose of attending college does not warrant eligibility for in-state tuition. Applicants seeking in-state status must complete and submit the 'Application for Virginia In-State Tuition Privileges' to the Office of the University Registrar no later than the first day of classes. The application is evaluated and the student is notified in writing if the request for in-state tuition is denied. Special rules apply to non-US citizens; contact the Registrar's Office for details or visit www.wm.edu/registar. A matriculating student whose domicile has changed may request reclassification from out-of-state to in-state status. Students seeking reclassification must complete and submit the 'Application for Virginia

In-State Tuition Privileges' to the Office of the University Registrar at least two months prior to the first day of classes of the term for which they seek in-state classification. The Office of the University Registrar evaluates the application and notifies the student if the request for in-state tuition is denied. Any student may submit in writing an appeal to the decision made, however, a change in classification will only be made when justified by clear and convincing evidence. All questions about eligibility for domiciliary status should be addressed to the Office of the University Registrar, (757)221-2815.

In determining domicile the school will consider the following factors:

- Citizenship status
- Residence during the year prior to the first official day of classes
- State to which income taxes are filed or paid
- Driver's license
- Motor vehicle registration
- Voter registration
- Employment
- Property ownership
- Sources of financial support
- Location of checking or passbook savings
- Social or economic ties with Virginia

For additional information on tuition, billing, payments, etc., please visit the following website: www.wm.edu/offices/financialoperations/sa/index.php

VIII. Requirements for Degrees

In addition to the following general requirements, special requirements for the various disciplines are listed under the heading of the appropriate department/program.m.

I. Degrees of Master of Arts and Master of Science

A. The chairperson of the department/program committee in which the student concentrates will plan and approve the student's program.

B. A minimum residence period may be required at the discretion of a department/program, subject to the approval of the Committee on Graduate Studies.

C. Each student must satisfy the language requirements (if required) prescribed by the department/program committee under which he or she is enrolled. The manner of fulfillment of language requirements shall be at the discretion of the department/program committee subject to the approval of the Committee on Graduate Studies.

D. Students submitting a thesis must successfully complete at least 24 semester hours of graduate credit, of which at least 12 must be earned in courses numbered 600 or above (except 700 - Thesis). Students not submitting a thesis must successfully complete eight additional semester hours of graduate course work in courses numbered 600 or above, totaling 32 semester hours. Each student must achieve a quality point average of 3.0 on a 4.0 scale in all courses undertaken for graduate credit at the College of William and Mary after admission to a degree program. No credit toward a degree will be allowed for a course in which a student receives a grade below C (quality points =2.0).

E. If submitting a thesis, it must be approved by the chairperson of the department/program committee of concentration, and by each member of the student's thesis committee. A thesis committee shall be named by the Dean of Graduate Studies and Research upon the recommendation of the department/program.

The committee will consist of at least three members, at least two of whom must be full-time faculty of the College and have a formal affiliation with the student's department/program. He or she must register for 700, Thesis, for at least one semester and may repeat this registration. Thesis credits are not included in the 24 semester hours required for the degree. The degree will not be granted until three copies of the thesis have been submitted to the Dean of Graduate Studies and Research, Arts and Sciences in final form for acceptance or rejection by the deadline listed in the College Calendar contained in this catalog.

F. An examination covering the entire field of study is required. This examination is conducted by the student's examination committee.

G. All requirements for the degree must be completed within a maximum period of six (6) calendar years after admission to the degree program. Requests for extension beyond the six-year limit must be filed following the procedures outlined in 'Time Limits for Degrees and Extensions' in this section of the catalog.

II. Degree of Master of Public Policy

A. The director of The Thomas Jefferson Program in Public Policy will plan and approve the student's program.

B. Each MPP student is expected to attend full-time (12 credits per semester) for four semesters. Students in the Accelerated B.A./B.S. and MPP path are expected to attend full-time (12 credits per semester) for two semesters following conferral of the Bachelor's degree.

C. At least 49 semester hours of graduate credit are required for the MPP degree. Students accepted for the degrees of MPP/JD, MPP/MBA, MPP/MS in Marine Science, MPP/PhD in Marine Science, or MPP/MS in Computational Operations Research are required to have 37 hours of MPP course credit. Each student must achieve a cumulative grade point average of 3.0 on a 4.0 scale in all courses undertaken for graduate credit at the College of William and Mary after admission to the MPP program. No credit toward a degree will be allowed for a course in which a student receives a grade below C (quality points=2.0).

D. It is expected that all degree requirements will be completed within 2 years after admission to the degree program.

E. Each student must complete a 10-week internship during the summer between the first and second years of the program. The program director must approve all internships.

III. Degree of Doctor of Philosophy

A. A minimum of three years of graduate study beyond the baccalaureate is required. A student must spend at least one academic year in continuous residence as a full-time student at the College of William and Mary after satisfying the requirements for the M.A. or M.S. degree. This may be waived only by the Committee on Graduate Studies on a petition from a department/program committee.

B. Course requirements for doctoral students shall be at the discretion of the major department/program. In addition to other course or credit requirements, each candidate for the Ph.D. must register for at least six credits of 800, Dissertation. No credit toward a degree will be allowed for a course in which a student receives a grade below C (quality points=2.0).

C. Each student must satisfy the language requirements prescribed by the department/program under which he or she is enrolled. The manner of fulfillment of language requirements shall be at the discretion of the department/program subject to the approval of the Committee on Graduate Studies. Such requirements must be fulfilled before the student may complete his or her comprehensive or qualifying examinations.

D. Each doctoral student must pass a comprehensive or qualifying examination designed to demonstrate competence in his or her field of study. Methods of examination, whether written or oral, shall be at the discretion of the student's department/program. An examining committee shall be appointed for each student by the Dean of Graduate Studies and Research, Arts and Sciences, upon the recommendation of the department/program.

E. A candidate for the Ph.D. must submit a dissertation based on original research and constituting a contribution to scholarly knowledge. A dissertation committee shall be named by the Dean of Graduate Studies and Research upon the recommendation of the department/program. The dissertation must be approved by each member of the committee. The committee will consist of at least four members, at least two of whom must be full-time faculty at the College and have a formal affiliation with the student's department/program. At least one member of the committee must be from outside the student's department/program, and may include qualified persons from outside the College. Persons who have an affiliation with the department/program (e.g., adjunct status) do not qualify as external members. The degree will not be granted until three copies of the dissertation have been submitted in final form by the deadline listed in the College Calendar contained in this catalog to the Dean of Graduate Studies and Research, Arts and Sciences.

F. Each candidate must successfully defend his or her dissertation in a final examination before it can be accepted by the College. This examination may be written or oral at the discretion of the department/program concerned and shall be open to the faculty and to such outside persons as the department/program may invite.

G. Acceptance of the dissertation by the College is conditional upon filing of the dissertation with ProQuest/UMI, Ann Arbor, Michigan. The requisite fee shall be paid by the student.

H. All requirements for the degree must be completed within a maximum period of seven (7) calendar years after starting the doctoral program. See the individual department/program description for details on when a student is considered to have started the seven-year Ph.D. clock. Requests for extension beyond the seven-year limit must be filed following the procedures outlined in 'Time Limits for Degrees and Extensions' in this section of this catalog.

Explanation of Course Descriptions

Graduate courses may be taken by persons other than regular or provisional graduate students in Arts and Sciences only with the consent of the chairperson of the department/program committee concerned.

Pairs of numbers (501,502) indicate continuous courses. A hyphen between numbers (501-502) indicates that the courses must be taken in the succession stated.

Courses involving laboratory or studio activity are so labeled. All others are classroom courses.

Semester hour credit for each course is indicated by numbers in parentheses.

GRADUATE CENTER PROGRAMS

The mission of the Graduate Center is to support and promote the culture of advanced study at the College of William and Mary. Through workshops, seminars, and short courses, the Graduate Center provides students with opportunities to develop the professional skills needed to take charge of their own careers. Student participation in Graduate Center programs is voluntary.

The topics and times of workshops and seminars vary each semester. An updated list of workshops and seminars can be found at http://www.wm.edu/as/graduate/graduate-center/courses/index.php. The Graduate Center's short courses typically meet for 1.5-2 hours of instruction each week in the late afternoon or early evening to avoid scheduling conflicts with students' traditional disciplinary courses. These College courses are open to all William and Mary graduate students. These courses are zero credit, and are offered at no cost to the student or home department in Graduate Arts and Sciences. The Graduate Center's College courses are listed below. All courses may be repeated.

Course Descriptions

COLL 501. English Conversation & Pronunciation.

Fall (0 credit) Graded Pass/Fail.

In this course students who are non-native English speakers will learn more about the rhythm, stress, and intonation patterns of spoken English, improve their ability to communicate with others, and practice distinguishing sounds that are unique to the English language. Recorded assignments and in-class discussions will allow students opportunities to practice their conversational skills and learn more about American culture.

COLL 503. Listening, Speaking & Pronunciation Skills.

Spring (0 credit) Graded Pass/Fail.

Listening and speaking are inextricably linked. Active listening is a key component to correcting pronunciation errors, and is essential for academic, professional, and personal success. This course is designed for nonnative English speakers who wish to develop their English proficiency. A variety of resources including film, CDs, and the Internet, expose students to different American accents and speech patterns. Recorded assignments provide opportunities for self-assessment and instructor feedback.

COLL 505. Oral Presentation Skills.

Fall (0 credit) Graded Pass/Fail.

This course is for domestic and international students who want to refine their oral communication skills and learn more about presentation norms. Students will participate in various kinds of oral communication activities, including presenting speeches given for different purposes, critiquing speech content, organization, and delivery, and presenting a paper following specific guidelines set forth by a conference or association.

COLL 508. Professional Communication: Preparing for the Job Market.

Fall (0 credit) Graded Pass/Fail.

This course provides preparation for post-student professional life, with a focus on the corporate environment. Students will identify the characteristics of their ideal job and will assess strategies to obtain such a position. Students will gain experience with composing written introductions to a prospective employer via CVs, resumés, and cover letters. Students will practice the skills needed for job interviews. Appropriate on-the-job interactions and common business etiquette norms will be discussed.

COLL 520. Academic Writing.

Spring (0 credit) Graded Pass/Fail.

A course for domestic and international students to improve writing skills and gain confidence in their ability to write formal, academic English. The writing process will be emphasized, with special attention given to improving the students' organizing, proofreading and revising skills. Students will learn how to identify their audience, define their purpose, and add cohesion and clarity to their writing. In addition, writing conventions concerning plagiarism and other writing norms will be examined.

COLL 525. Writing for Publication.

Fall (0 credit) Graded Pass/Fail.

A course for domestic and international students who have mastered the basics of academic writing, and are preparing articles for publication in the sciences and humanities. Students will examine articles from their field to learn more about field-specific styles. In addition, they will review and revise their own writing, and participate in peer reviews. Participants in this course should currently be involved in doing research.

COLL 530. Thesis/Dissertation Writing.

Spring (0 credit) Graded Pass/Fail.

A course for domestic and international students beginning their theses/dissertations. Thesis/dissertation guidelines will be discussed and sample chapters from specific fields will be analyzed. In collaboration with their academic advisor and in consultation with the instructor, students will organize and write individual chapters, simultaneously reviewing and revising their writing.

COLL 550. College Teaching.

Spring (0 credit) Macdonald, Zuber. Graded Pass/Fail.

Discussion and exploration of college teaching including general issues in college teaching; various teaching strategies including lectures, discussions, group work, writing assignments; course design, syllabus and test construction, and grading; integrating research and education; and job search and application strategies. Students will develop a portfolio to include sample assignments and a general teaching statement. Readings on teaching and learning and on university education. Instructor permission required.

COLL 601. Intensive English Conversation and Pronunciation.

Summer (0 credit) Graded Pass/Fail.

In this course students who are non-native English speakers will learn more about the rhythm, stress, and intonation patterns of spoken English, improve their ability to communicate with others, and practice distinguishing sounds that are unique to the English language. Recorded transcripts and in-class discussions will allow students opportunities to practice their conversational skills and learn more about American culture. In addition, specialized vocabulary and readings will address different fields of study, and student presentations will focus on field-related topics.

COLL 620. Intensive Academic Writing.

Summer (0 credit) Graded Pass/Fail.

In this course domestic and international students will improve their writing skills and gain confidence in their ability to write formal, academic English. The writing process will be emphasized, with special attention given to improving the students' organizing, proofreading and revising skills. Students will learn how to identify their audience, define their purpose, and add cohesion and clarity to their writing. Writing conventions concerning plagiarism and other writing norms will be examined. Writing assignments will be tailored to the students' specific fields of study.

ADDITIONAL GRADUATE COURSES

Some departments at the College of William and Mary offer courses for graduate students even though these departments do not themselves offer a graduate degree. These courses are listed in this section.

GEOL 565. Hydrology.

Spring (4) Hancock. Prerequisites: GEOL 101 or GEOL 110 or GEOL 150, and MATH 111, or permission of instructor. Offered in alternate years.

Quantitative investigation of the major components of the hydrologic cycle and their interactions, including atmospheric water, surface water, and groundwater. Graduate students will be required to research topics or questions as given by the instructor and make presentations to the class. Field trips required. Three class hours, three laboratory hours. [Cross-listed with GEOL 315]

MATH 501. Probability.

Fall and Spring (3,3) Prerequisite: Consent of instructor.

Topics include: combinational analysis, discrete and continuous probability distributions and characteristics of distributions, sampling distributions.

MATH 503. Intermediate Analysis.

Spring (3) Prerequisite: Consent of instructor.

Sequences and series of functions; analysis in metric spaces and normed linear spaces; general integration and differentiation theory.

MATH 505. Complex Analysis.

Fall (3) Prerequisite: Consent of instructor.

The complex plane, analytic functions, Cauchy Integral Theorem and the calculus of residues. Taylor and Laurent series, analytic continuation.

MATH 508. Advanced Linear Algebra.

Fall (3) Prerequisite: Consent of instructor.

Eigenvalues, singular values, matrix factorizations, canonical forms, vector and matrix norms; positive definite, hermitian, unitary and nonnegative matrices.

MATH 509. Probability and Statistics for Teachers.

Summer (3) Prerequisite: Consent of instructor.

An introduction to probability, descriptive statistics, and data analysis; exploration of randomness, data representation and modeling. Descriptive statistics will include measures of central tendency, dispersion, distributions, and regression. Methods of reliable data gathering. First approaches to statistical inference. A basic course for preparation of K-8 Mathematics teachers.

MATH 510. Special Topics in Mathematics.

Fall and Spring (1-3, 1-3). This course may be repeated for credit with permission of the instructor.

A treatment of topics of interest not routinely covered by existing courses. Material may be chosen from topology, algebra, differential equations and various other areas of pure and applied mathematics.

MATH 512. Introduction to Number Theory.

Fall (3) Prerequisite: Consent of instructor.

An elementary course in the theory of integers, divisibility and prime numbers, a study of Diophantine equations, congruences, number-theoretic functions, decimal expansion of rational numbers and quadratic residues.

MATH 513. Introduction to Numerical Analysis I.

Fall (3) Prerequisite: Consent of instructor.

A discussion of the mathematical theory underlying selected numerical methods and the application of those methods to solving problems of practical importance. Computer programs are used to facilitate calculations. The topics covered are: roots of equations, systems of linear equations, interpolation and approximation, and numerical integration. Students planning to take MATH 514 are strongly encouraged to take MATH 513 first.

MATH 514. Introduction to Numerical Analysis II.

Spring (3) Prerequisite: Consent of instructor.

A discussion of the mathematical theory underlying selected numerical methods and the application of those methods to solving problems of practical importance. Computer programs are used to facilitate calculations. The topics covered are: iterative methods for linear systems, eigenvalue computations and differential equations. Students planning to take MATH 514 are strongly encouraged to take MATH 513 first.

MATH 516. Geometry and Measurement for Teachers.

Summer (3) Prerequisite: Consent of instructor.

Explorations of the foundations of informal measurement and geometry in one, two, and three dimensions. The van Hiele model for geometric learning is used as a framework for how children build their understanding of length, area, volume, angles, and geometric relationships. Visualization, spatial reasoning, and geometric modeling are stressed. As appropriate, transformational geometry, congruence, similarity, and geometric constructions will be discussed. A basic course for preparation of K-8 Mathematics teachers.

MATH 517. Vector Calculus for Scientists.

Spring (3) Prerequisite: Consent of instructor.

Directional derivatives, differential forms and the Poincaré lemma, chain rule; Jacobians, change of variable and application to Lagrangian mechanics; path integrals and the deformation theorem, surface integrals and Stokes' theorem. Additional topics will be covered if time permits.

MATH 523. Operations Research: Deterministic Models.

Fall (3) Prerequisite: Consent of instructor.

An introduction to deterministic Operations Research techniques and applications. Topics include search algorithms, simplex search for linear programs, duality and sensitivity analysis for linear programs, shortest path problems, network models and discrete optimization.

MATH 524. Operations Research: Stochastic Models.

Spring (3) Prerequisite: Consent of instructor.

A survey of probabilistic operations research models and applications. Topics include stochastic processes, Markov chains, queuing theory and applications, Markovian decision processes, inventory theory and decision analysis.

MATH 528. Functional Analysis.

Spring of odd-numbered years (3) Prerequisite: Consent of instructor.

Introduction to the geometry of Hilbert spaces, bounded linear operators, compact operators, spectral theory of compact selfadjoint operators, integral operators and other applications.

MATH 535. Numbers and Number Sense.

Summer (3) Prerequisite: Consent of instructor.

Basic number strands in fractions and rational numbers, decimals and percents; ratios and proportions in the school curriculum. Interpretations, computations, and estimation with a coordinated program of activities that develop both rational number concepts and skills and proportional reasoning. A basic course for preparation of K-8 Mathematics teachers.

MATH 536. Functions and Algebra for Teachers.

Summer (3) Prerequisite: Consent of instructor.

Examination of representation and analysis of mathematical situations and structures using generalization and algebraic symbols and reasoning. Attention will be given to the transition from arithmetic to algebra, working with quantitative change, and the description of a prediction of change. A basic course for preparation of K-8 Mathematics teachers.

MATH 537. Rational Numbers and Proportional Reasoning.

Summer (3) Prerequisite: Consent of instructor.

In this class students explore the conceptual and procedural basis of rational numbers including fractions, percents, and decimals. The essential role that proportional reasoning plays in higher mathematics is discussed. The logic and interpretations of order, operations, and algorithms are investigated using visual and physical representations. A basic course for preparation of K-8 Mathematics teachers.

MATH 538. Algebra, Functions and Data Analysis.

Summer (3) Prerequisite: Consent of instructor.

In this class, students explore the use of mathematics as an analytical tool in applied problems including those with practical and/or scientific settings. Algebraic methods will be applied to problems of coding, growth and decay and probability theory. Elements of statistical analysis of experimental data will also be discussed. This course is designed for secondary mathematics teachers.

MATH 539. Discrete Mathematics.

Summer (3) Prerequisite: Consent of instructor.

Topics for discussion in this class will include graph theory, linear programming, identification numbers and check digits, and recursion formulas. Time permitting, symmetry and tilings will also be considered. This course is designed for middle and high school mathematics teachers.

MATH 541. Introduction to Applied Mathematics I.

Fall (3) Prerequisite: Consent of instructor.

A study of mathematical principles and techniques common to different scientific disciplines. The central topics are differential and matrix equations. Beginning with symmetric linear systems and associated matrix theory, the course continues with equilibrium equations, least squares estimation, vector calculus, calculus of variations, Fourier series and complex variables. Applications to structures, electrical networks, data analysis, etc. are included.

MATH 542. Introduction to Applied Mathematics II.

Spring (3) Prerequisite: MATH 541 or Consent of instructor.

A continuation of Mathematics 541. Topics are numerical methods for linear and nonlinear equations and eigensystems, finite elements, initial-value problems with introduction to the phase plane and chaos, stability analysis, network flows and optimization. Applications to simple fluid flow, heat transfer, assignment and transportation problems, etc. are included.

Math 543. Exploring Algebra and Trigonometry.

Summer (3) Prerequisite: Consent of instructor.

Students will examine polynomial, trigonometric, exponential and logarithmic functions as precursors to their use in calculus. Graphical analysis of these functions and its relationship to the solution of non-linear equations will be considered. Applications to science and engineering will be included. This course is designed for secondary mathematics teachers.

Math 544. Exploring Calculus.

Summer (3) Prerequisite: Consent of instructor.

Students will study the role of limiting processes in the analysis of the standard functions that arise in applied mathematics. Differentiation and integration of polynomials, exponentials and logarithms will be considered. Geometric implications of the methods will be a central topic in this study. Applications from science, economics and finance will be included. This course is designed for secondary mathematics teachers.

Math 550. Modeling and Computer Programming.

Fall (3) Prerequisite: Consent of instructor.

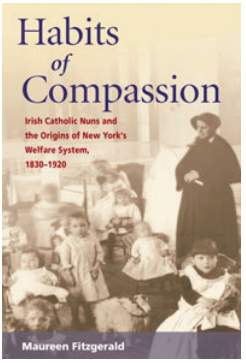
In this class, students will examine mathematical models of a variety of scientific, engineering and economic regimes. As the need arises, computer processing will be employed to demonstrate the implications of these models. Microsoft Excel is a likely choice for the computing language. This course is designed for secondary mathematics teachers.

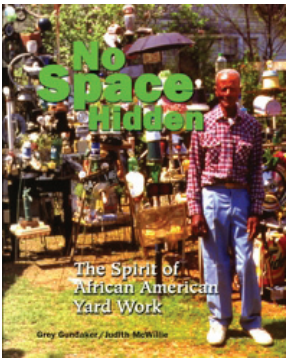
MATH 552. Mathematical Statistics.

Spring (3) Prerequisite: Consent of instructor.

The mathematical theory of statistical inference. Possible topics include: maximum likelihood, least squares, linear models, methods for estimation and hypothesis testing.

AMERICAN STUDIES PROGRAM





For nearly three decades the American Studies Program has offered a rigorous, interdisciplinary course of graduate study at the College of William and Mary. The Program's core faculty members all hold joint appointments - in Anthropology, Art History, English, History, Religious Studies, and Sociology - which ensures students both gain expertise in a variety of methods and perspectives for the study of cultures in the Americas and engage the vigorous intellectual debates at the heart of the field of American Studies. The Program's course of study is individually driven, so students work closely with their advisors and other faculty in shaping curricula and research topics that best suit their interests. The Program offers three degree tracks: the Ph.D., the M.A./Ph.D., and the M.A.

The Program prepares broadly trained scholar-teachers who are excellently suited to American Studies professorships, disciplinarily based professorships, and a host of other posts in intellectual work. Recent dissertation topics have ranged from tomboys in American literature to Southern musicians' autobiographies, from photography's role in the emergence of journalism and documentary to celebrity in the late nineteenth century, and from Chicano muralists in Northern California to the politics of commemoration in the Civil Rights movement. Recent Master's thesis topics have included women in the fishing industry along the Chesapeake, jazz and the civil rights movement, Muslim womanhood at the 1893 Columbian Exposition, and the commodification of New England. In recent years, American Studies graduates have gone on to positions at a wide variety of colleges and universities, including Duke University, Case Western Reserve, Temple University, Clemson University, Trinity College, several campuses of the Pennsylvania State University, and the University of Richmond.

The Program offers assistantships to funded M.A./Ph.D. and Ph.D. students that provide practical experiences in American Studies-related fields like archive and manuscript collections, editing, and museum research. All Ph.D. students receive teacher training and serve as teaching assistants, and most have the opportunity to teach a course of their own design after passing their Ph.D. qualifying exams.

Faculty

DIRECTOR **Chandos M. Brown** Associate Professor (History and American Studies) (Ph.D., Harvard).

GRADUATE DIRECTOR **Grey Gundaker** Professor (American Studies and Anthropology) (Ph.D., Yale).

UNDERGRADUATE DIRECTOR **Arthur L. Knight** Associate Professor (English and American Studies) (Ph.D., University of Chicago).

PROFESSORS **David P. Aday** (Sociology and American Studies) (Ph.D., University of Kansas), **Elizabeth Barnes** (Professor of English and American Studies) (Ph.D., UC-Santa Barbara), **Michael L. Blakey** (National Endowment for the Humanities Professor of Anthropology and American Studies) (Ph.D., University of Massachusetts, Amherst), **Susan V. Donaldson** (National Endowment for the Humanities Professor of English and American Studies) (Ph.D., Brown University), **Robert J. Scholnick** (English and American Studies) (Ph.D., Brandeis), and **Susan V. Webster** (Mahoney Professor of Art and Art History; on leave 2011-2012) (Ph.D., University of Texas, Austin).

EMERITUS PROFESSORS **Richard S. Price** (Duane A. and Virginia S. Dittman Professor of American Studies, Anthropology, and History) (Ph.D., Harvard), **Sally H. Price** (Duane A. and Virginia S. Dittman Professor of American Studies and Anthropology) (Ph.D., Johns Hopkins), and **Alan Wallach** (Ralph H. Wark Professor of Art and Art History and American Studies) (Ph.D., Columbia).

ASSOCIATE PROFESSORS **Maureen A. Fitzgerald** (Religious Studies and American Studies; on leave Fall 2011) (Ph.D., University of Wisconsin-Madison), **Charles F. McGovern** (American Studies and History) (Ph.D., Harvard; on leave 2011-2012), **Leisa D. Meyer** (American Studies and History) (Ph.D., University of Wisconsin-Madison), **M. Lynn Weiss** (American Studies and English) (Ph.D., Brandeis), and **Karin M. Wulf** (American Studies and History) (Ph.D., Johns Hopkins).

ASSISTANT PROFESSOR **Kara Thompson** (Assistant Professor of English and American Studies) (Ph.D., University of California - Davis).

VISITING ASSISTANT PROFESSORS **Timothy L. Barnard** (American Studies and Coordinator of Mellon Projects in the Humanities) (Ph.D., William & Mary), and **Elizabeth Schlabach** (History and American Studies) (Ph.D., Saint Louis University).

General Description

The general mission of the graduate program is to prepare students for careers in which scholarly knowledge of and approaches to American cultures and society are requisite. These include professions in higher education, museums, publishing, government, and other areas requiring a capacity for rigorous, interdisciplinary investigation.

The M.A. program offers excellent opportunities for persons seeking advanced study in the liberal Arts for its own sake as well as to enhance preparation for careers involved in interpreting American life to far-reaching audiences. Some students may also undertake the M.A. in preparation for entrance into a doctoral program.

The J.D./M.A., a joint program leading to the J.D. in the Marshall-Wythe School of Law and the M.A. in American Studies is designed to encourage the interdisciplinary study of law and other aspects of American society and culture. For some students, the program may foster investigation of American legal history within the broader framework of U.S. cultural and intellectual history. Others may pursue inquiries on broad historical or contemporary themes, exploring the interplay between law and culture in forming institutions, policies, and thought within the United States.

The Ph.D. is designed for those students who wish to pursue original, interdisciplinary research and whose professional goals require a doctorate.

Students must hold a bachelor's level degree from an accredited institution of higher learning to enter the M.A., J.D./M.A., or Ph.D. program. Students seeking admission to these programs may usually transfer up to six credit hours earned in another graduate program at an accredited institution toward their degree requirements.

Beyond the required core courses in American Studies, graduate students have wide latitude to choose a program of study appropriate to their interests. Our special areas of strength include: African American Studies, Art History, Early American History and Culture, Law and American Culture, Material Culture, Popular Culture, Ritual Studies, Women's and Gender Studies, Cultural Studies, Visual Studies, and Religious Studies. Together with an advisor, students will design an educational program for themselves that is both individualized and coherent.

Admission

All applicants are required to submit test scores, transcripts, letters of recommendation, a sample of writing up to 20 pages in length, and a response to an additional question. American Studies requires candidates to submit three scores for a GRE test taken within five years prior to application: Verbal, Quantitative, and Analytical Writing. The Miller Analogies test is not acceptable. Foreign applicants must also report scores on the Test of English as a Foreign Language (TOEFL). The application deadline for students intending to begin graduate work in the fall semester is January 1. There are no spring admissions. Only applicants intending to enter as full-time doctoral students are considered for financial aid.

Degree Requirements for the Master of Arts

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)
Note: Students should consult the American Studies Graduate Handbook, available at the Program website, for a fuller account of program requirements.

I. Course distribution
   A. A two-semester introductory seminar (661-662), designed to provide a broad framework for the study of American culture and society.
   B. Formal courses and independent readings, designed to prepare the student in a coherent field of inquiry. The courses, readings, and field will be chosen in consultation with the student's advisor and the Director of Graduate Studies.
   C. Two courses of directed study during which the student undertakes the research and writing of the Master's thesis, under the supervision of a faculty member in an area of American Studies.

II. A thesis, based on original research, which develops a coherent argument and makes a contribution to the study of American life. The thesis, supplemented by an oral defense before a faculty committee, will serve as the M.A. field examination in American Studies.

The M.A. degree coursework can be completed in one academic year, with students taking 12 credits each semester. Students who enroll in the program on a full-time basis are expected to submit their theses by the end of their third semester in the program. Alternatively, students may elect to pursue the M.A. on a part time basis, taking up to six years to complete the requirements.

Degree Requirements for the Doctor of Philosophy

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)
Note: Students should consult the American Studies Graduate Handbook, available at the Program website, for a fuller account of program requirements.
Students may enter the Ph.D. program by one of two routes. They may enroll directly into the sequential M.A./Ph.D. course of studies at William and Mary, or they may matriculate in the doctoral program, after completing M.A. degrees at other institutions.
The following requirements hold for all doctoral candidates.

I. Course distribution (60 credit hours beyond the B.A.; i.e., 24 credit hours for the M.A. and 36 credit hours for the Ph.D.)
   A. A two-semester introductory seminar (661-662), designed to provide broad framework for the study of American society and culture. (Normally, students will have taken this course in the first year of the M.A./Ph.D. program.)
   B. Formal courses and independent readings, chosen in consultation with the student's advisor and the Director of Graduate Studies, and designed to prepare a student to present Major and Minor Fields for the comprehensive examination.

II. Reading knowledge of a foreign language of scholarship by the end of the fourth semester.

III. A qualifying exam in one Major and one or more Minor Fields. Major fields encompass established disciplines, such as History or English, and area or interdisciplinary studies, such as African-American Studies, Material Culture, or Women's and Gender Studies. Minor fields may be devised to suit the students' particular interests. They may cover special areas of strength at William and Mary, specific topics within Major Fields, or comparative or theoretical perspectives on American life, such as Critical Theory or Race Relations in the Americas.

IV. A dissertation based upon original research, which makes a scholarly contribution to the study of American life.

Ph.D. students may expect to take five or six years of full-time work to complete all requirements for the doctorate. Normally, full-time students will pursue three semesters of course work beyond the M.A. and then take the qualifying examination in the fourth semester of their doctoral studies. After successful completion of the qualifying examination, students will embark upon their dissertations.

The American Studies Program also enables students to pursue the Ph.D. on a part time basis. Students may take some of their Ph.D. coursework part-time, but they must spend at least one academic year in continuous residence as a full-time student at the College. Ph.D. students have seven years to complete their doctorate after the colloquium held in preparation for the qualifying examination.

Description of Courses

Unless otherwise noted, all courses are graded using standard grading [A, B, C, D, F] scheme (See VI. Grading and Academic Progress in the section entitled 'Graduate Regulations' in this catalog) and may not be repeated for credit (See Repeated Courses requirements in the section entitled 'Graduate Regulations' in this catalog).

500. American Material Culture.

Fall (3) Staff. (Not offered 2011-2012)

This course uses a series of case studies to approach the material worlds of people in the United States, past and present. Studies vary but may focus on ethnic groups like the 19th century Pennsylvania Germans, the construction of regions such as Appalachia, the special circumstances of the Hmong and other refugees, the classification of objects as 'folk' or 'fine,' and the alteration of landscapes or structured environments over time. Each case study serves the dual functions of illuminating the role of material life in making and maintaining American identities and of introducing an interdisciplinary array of methods, fields of inquiry, and theories that assist interpretation of artifacts and their contexts.

512. Maroon Societies.

Spring (3) Staff. (Not offered 2011-2012)

An exploration of the African American Communities created by escaped slaves through-out the Americas, from Brazil through the Caribbean and into the southern United States. Emphasis on the processes by which enslaved Africans from diverse societies created new cultures in the Americas, on the development of these societies through time, and on the present-day status of surviving maroon communities in Suriname and French Guiana, Jamaica, Colombia, and elsewhere.

515. Artists & Cultures.

Fall (3) Staff. (Not offered 2011-2012)

This course will explore the artistic ideas and activities of people in a variety of cultural settings. Rather than focusing primarily on formal qualities (what art looks like in this or that society), it will examine the diverse ways that people think about art and artists, and the equally diverse roles that art can play in the economic, political, religious and social aspects of a cultural system. Materials will range from Australian barkcloth paintings to Greek sculptures, from African masks to European films.

518. Material Life in African America.

Fall (3) Gundaker.

This seminar explores the world of things that African Americans have made and made their own in what is now the United States from the colonial era through the present. Topics include landscapes of enslavement and freedom, labor practices, architecture, foodways, objects, aesthetics, contexts of production and use, and the theories of material life, expression, and culture through which these topics are studied. [Cross-listed with ANTH 530]

523. The Museum in the United States.

Spring (3) Wallach. (Not offered 2011-2012)

This seminar will study specific museums while focusing on basic questions having to do with the social forces that gave rise to museums and the roles museums have played and continue to play in U.S. society.

529. Exploring the Afro-American Past.

Fall (3) Staff. (Not offered 2011-2012)

A study of the commonalities and differences across Afro-America from the U.S. to Brazil. Works in Anthropology, History, and literature will be used to explore the nature of historical consciousness within the African diaspora and diverse ways of understanding and writing about Afro-American pasts.

534. Ethnographic History.

Spring (3) Staff. (Not offered 2011-2012)

Critical readings of recent works by anthropologists and historians, with an emphasis on cross-disciplinary theory and method.

545. The Making of a Region: Southern Literature and Culture.

Spring (3) Donaldson.

The U.S. South has long functioned as a repository of national anxieties, failings, and backwardness, the "exception" to the American narrative of freedom, success, and progress by virtue of its defining features of slavery, segregation, economic exploitation, and endemic violence. This course will focus on the role of the region as the nation's imaginative borderlands in the aftermath of the Civil War and emancipation, when definitions of regional and national identity were undergoing radical realignment along with reformulations of family, community, race, and racialization. Making use of narratives, nonfiction, film, history, and visual representations, we'll examine the highly contested arena of Reconstruction, the rise of Jim Crow, contending narratives over memory and ownership of the past, visual and verbal critiques of segregation, Civil Rights battles, and postmodern reclamations and reconstructions of a region that continues to struggle with its long legacy of cultural abjection and marginalization.

570. Topics in American Studies.

If there is no duplication of topic, may be repeated for credit.

Topics for Fall 2011

Performing Sovereignty: Tribal Nationalism and Self-Determination in the Age of Biopolitical Reproduction. *(3) Thompson.*

This seminar investigates the concepts of sovereignty, self-determination, and biopolitics through the U.S. federal incursions into tribal politics. By reading theoretical accounts of sovereignty and biopolitics in the context of Native American legal and cultural histories, we will ask: How is sovereignty performative? Is sovereignty a "natural" or inherent right?

581. Collecting and Exhibiting Culture.

Spring (3) Staff. (Not offered 2011-2012)

This course will examine the history of field collecting in different parts of the world, questions of cultural ownership, theories of acquisition and preservation used by museums and private collectors, and issues in the exhibiting of both objects and people. Readings will draw mainly on material from the Americas, Africa, and Europe. [Cross-listed with ANTH 484]

582. Arts of the African Diaspora.

Fall (3) Staff. (Not offered 2011-2012)

An exploration of artistic creativity in the African diaspora-song, dance, folktales, painting, ceramics, architecture, textile arts, woodcarving, and other media. Consideration of tradition and art history, the articulation of aesthetic ideas, cross-fertilization among different forms and media, the role of gender, the uses of art in social life, kinds of meaning, the nature of artistic creativity, and continuities with artistic ideas and form in African societies. Readings will draw on materials from Africa, North and South America, and the Caribbean.

583. The Material Culture of Early America: Artifacts as Design and as Commodities.

Spring (3) Staff. (Not offered 2011-2012)

As groundwork for the interpretation of objects in museum exhibits, historic house museums, and a variety of scholarly studies, this course introduces techniques for visual analysis of artifacts and ideas about relationships between design, technology, production, and marketing of consumer goods. Students explore various theoretical approaches to the analysis of material culture, develop critical bibliographical skills, and learn to phrase questions (artistic, technological, economic, functional, social, and cultural) about objects. They explore a wide range of sources that may illuminate the questions, and they develop designs for research projects that may answer them.

584. The Material Culture of America: Focus on Decorative Arts.

Spring (3) Staff. (Not offered 2011-2012)

How do we describe the objects with which Americans have furnished their domestic and public buildings? What do they tell us about how American lived and what they thought about themselves, others, and their various worlds? From the time of the earliest seventeenth-century settlements until the present day, the decorative arts in America have both been closely tied to European heritage and to the colonies and nation. This course concentrates on artifacts made or used in America and explores issues of design, production, and distribution in relation to the changing American experience.

590. Writing and Reading Culture.

Spring (3) Staff. (Not offered 2011-2012)

Trends in Ethnography (and Ethnographic History), during the past two decades. Students will begin with a classic monograph go on to read about the crisis in representation as depicted in Clifford and Marcus, and then devote themselves to a critical analysis of a range of more recent work.

602. American Culture Through the Lenses of the Social Sciences.

Fall (3) Staff. (Not offered 2011-2012)

This seminar introduces students to seminal social theories of social organization, individual and society, cultures, stratification, and social change. Emphasis will be on interdisciplinary theory-building in the social sciences.

603. Problems in Literature and Society.

Fall (3) Staff. (Not offered 2011-2012)

605. Practicum in American Material Culture.

Spring (3-6) Gundaker. (Not offered 2011-2012)

The practicum requires permission of the instructor prior to enrollment and may be taken for 3 or 6 credits, depending upon the student's overall course of study. The practicum combines an individual learning experience in one area of material culture study with bibliographic research and participation in group discussion. The focus of the practicum is an internship or hands-on project supervised by a specialist or curator. Suggested topics include vernacular architecture, decorative arts, landscape, conservation and restoration, ethnographic and archeological fieldwork, and instruction in a mode of material production. Ideally the chosen topic should relate to the student's long-term professional plans. During the course of the semester students develop a bibliographic essay on their specialty. They also join other practicum participants in a weekly discussion designed to relate practical learning to broader issues of material culture theory and research.

661. Introduction to American Studies.

Fall (3) Wulf.

This is the first of a two semester course (continued by AMST 662) required of all entering graduate students in American Studies. In this reading- and writing-intensive seminar, students encounter both current and classic works of the field. They will acquaint themselves with a wide array of interdisciplinary approaches, focusing on both critical theory and practical application in research. MA students will produce the first iterations of the Master's thesis, while Ph.D. students will produce the first outline of their comprehensive fields or alternatively, a dissertation topic. The course provides training in the responsible and ethical conduct of research, including discussions of fabrication, falsification, and plagiarism.

662. Introduction to Research in American Studies.

Spring (3) Brown. Graded Pass/Fail.

This research seminar, which is the second part of the required introductory sequence in American Studies, helps students gain tools for research in three categories: theory, approaches to content, and practices, procedures and vocabularies within and between disciplines. Students will encounter and discuss exemplary texts particularly rich in method. Students will be expected to produce a paper that will comprise an important element of either the master's thesis or (in the case of Ph.D.-only students) of a comprehensive exam field or possible dissertation topic.

671. American Studies: Profession and Practice.

Spring (1) Staff. (Not offered 2011-2012)

This course investigates both practical and theoretical issues relevant for American Studies in and outside the academy. The class offers students strategic approaches to areas critical for successful careers, areas such as planning long term research, writing grant applications, conference planning, and honing classroom teaching skills. As well, we explore pertinent issues that influence American Studies today: the university system, public culture, and professionalism. The course features the regular participation of guests from American Studies and outside the program. The course is open only to American Studies graduate students, preferably nearing their comprehensive exams.

690. Directed Research.

Fall and Spring (3,3) Various Faculty.

A program of extensive reading, writing and discussion in a special area of American Studies for the advanced student. Students accepted for this course will arrange their program of study with an appropriate faculty advisor. Permission of the program chair is required. This course may be repeated for credit if there is no duplication of topic.

695. Independent Research.

Fall and Spring (3,3) Gundaker. Graded Pass/Fail.

Research for the M.A. thesis. Maximum of six credits.

700. Thesis.

Fall and Spring (3,3) Gundaker. This course may be repeated.

Directed study for Master's thesis.

790. Directed Research.

Fall and Spring (3,3) Various Faculty.

A program of extensive reading, writing and discussion in a special area of American Studies for the advanced student. Students accepted for this course will arrange their program of study with an appropriate faculty advisor. Permission of the program chair is required. This course may be repeated for credit if there is no duplication of topic.

795. Independent Research.

Fall and Spring (3,3) Gundaker. Graded Pass/Fail.

Research for the Ph.D. dissertation. Maximum of twelve credits.

800. Dissertation.

Fall and Spring (3,3) Gundaker. This course may be repeated.

Directed study for Doctoral dissertation.

ANTHROPOLOGY DEPARTMENT

The expertise and interests of faculty members within the Department of Anthropology at William and Mary span all four sub-disciplines within the field: archaeology, biological anthropology, cultural anthropology and anthropological linguistics. The boundaries between these fields are fluid, and we strongly encourage research that employs theory and methodology from more than one sub-discipline. Current research projects being carried out by faculty and graduate students include: African-American material culture in the American South; the excavation of Powhatan's settlement at Kiskiak; ethnohistorical and archaeological research on slavery and British colonialism in Barbados and Bermuda, the "local food" movement, rainforest ethnoecology, animal emotions, Native American language revitalization, Andalusian musical traditions, the Anthropology of Science, and analyses of Native American and African American skeletal collections.

Two graduate programs are offered, differing in goals and requirements. The M.A. in Historical Archaeology is a terminal degree designed to prepare students for careers in historical archaeology and related professions. The Ph.D. program admitted its first students in fall 2001; with specializations in Historical Archaeology and Historical Anthropology, it is designed to prepare students for long-term research and teaching in anthropology.

The Anthropology Department's teaching and research facilities include laboratories housing extensive collections of prehistoric and historic artifacts from Virginia and the Caribbean, a research library, and computer facilities for Cad and GIS. Three research centers are housed in the department: The Institute for Historical Biology which holds a large database on the 17th and 18th century African Burial Ground in New York City; The American Indian Resource Center which undertakes applied and collaborative projects with contemporary native communities; and the William and Mary Archaeological Conservation Center which gives students the opportunity to observe and participate in the conservation of archaeological materials. Students also participate in projects run by The William and Mary Center for Archaeological Research, which provides cultural resource management (CRM) services for public and private organizations, and in material science research at the Jefferson Laboratory in Newport News.

The Williamsburg area provides unparalleled historical, archaeological and museum resources. The Anthropology Department maintains strong ties with local research and service organizations which offer students opportunities to engage in field and laboratory research. Scholars from the Colonial Williamsburg Foundation regularly teach courses within the department and supervise graduate research projects. William and Mary also offers a field school at Colonial Williamsburg each summer, and graduate students in anthropology are actively involved as supervisors. In addition, faculty members in the department conduct field research on local prehistoric and Protohistoric sites, in Bermuda, the American South, in Africa, and in the Caribbean.

Faculty

CHAIR **Kathleen J. Bragdon** Professor (Ph.D., Brown).
GRADUATE DIRECTOR **Martin D. Gallivan** Associate Professor (Ph.D., Virginia).
PROFESSORS **Michael L. Blakey**[1] NEH Professor (Ph.D., Massachusetts), **Grey Gundaker** (Ph.D., Yale), **Tomoko Hamada Connolly** (Ph.D., California Berkeley), **Barbara J. King** Chancellor Professor (Ph.D., Oklahoma), and **Brad Weiss** (Ph.D., Chicago).
ASSOCIATE PROFESSORS **William H. Fisher** (Ph.D., Cornell), and **Frederick H. Smith** (Ph.D., Florida).
ASSISTANT PROFESSORS **Götz Hoeppe** (Ph.D., Berlin), and **Jonathan Glasser** (Ph.D., Michigan).
INSTRUCTOR **Curtis S. Moyer**[2] (M.A., George Washington).
RESEARCH PROFESSOR **Joanne Bowen**[3] (Ph.D., Brown).
RESEARCH ASSISTANT PROFESSOR **Danielle Moretti-Langholtz**[4] (Ph.D., Oklahoma).
VISITING PROFESSOR **Edward C. Harris**[5] (Ph.D., London).
VISITING ASSOCIATE PROFESSOR **Marley R. Brown** (Ph.D., Brown).
FACULTY FELLOW **Neil Norman** (Ph.D., Virginia).
EMERITUS PROFESSORS **Richard Price** (Ph.D., Harvard), **Sally Price** (Ph.D., Johns Hopkins), and **Mary M. Voigt** (Ph.D., Pennsylvania).

General Description

The Department of Anthropology's graduate program offers both general coverage of the discipline as a whole and more specifically focused preparation for students intending to work in the fields of Historical Archaeology and Historical Anthropology.

Faculty specialties include cultural theory, biocultural theory, area studies, and historiography, with special emphasis on comparative colonialism, the African Diaspora, Native America, and the archaeology of Colonial America and the Caribbean. Practical training in field, laboratory, and museum/archaeological conservation methods is available in various courses, including summer field schools/programs. Scholars in the Colonial Williamsburg Foundation participate in the Department of Anthropology's graduate program.

Admission

Students will have the option of enrolling directly into the M.A.-only program, into the sequential M.A./Ph.D. program, or into the Ph.D. program after completing the M.A. degree at William and Mary or at another institution.

Admission is competitive, based on such criteria as grade point average, GRE scores, letters of recommendation, experience, and educational history. Minimally, to be considered each applicant must have a Bachelor's degree in anthropology, history, or a related discipline, and a 3.0 grade average [on a 4.0 scale]. Graduate studies begin in the fall; there are no spring admissions.

Application materials consist of the College's standard form, GRE scores taken within the past five years, undergraduate transcripts, three letters of recommendation, and a writing sample. Foreign applicants will also be required to submit scores on the Test of

[1] Director, Institute for Historical Biology
[2] Curator of Collections, Department of Anthropology; Director, William and Mary Archaeological Conservation Center
[3] Curator of Zoological Collections, The Colonial Williamsburg Foundation
[4] Director, American Indian Resource Center
[5] Executive Director, National Museum of Bermuda

English as a Foreign Language (TOEFL). Applications and supporting materials for both the M.A. and the M.A./Ph.D. programs must be received by January 15.

The M.A./Ph.D. program in Anthropology at William and Mary requires full-time study. Full-time and part-time students will be considered for admission into the M.A.-only program.

Degree Requirements for the Master of Arts with specialization in Historical Archaeology

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)
The Master of Arts program is designed to train students for proficiency in the general field of Anthropology with a specialization in Historical Archaeology. Students in the M.A.-only program do not receive funding from the Department of Anthropology. For information on other sources of financial aid, M.A.-only students should contact the Office of Financial Aid of the College of William and Mary.

Each student in the M.A.-only program must successfully complete 30 semester hours of graduate coursework, including ANTH 600, 603, and electives. All students will register each semester for ANTH 700 (Thesis) in addition to the normal course load of 12 semester hours. Students who have not had adequate archaeological field experience will be required to enroll in ANTH 625, but credit earned for this course cannot be counted toward a graduate degree at William and Mary.

Each M.A.-only student will write a thesis on a research topic approved by the Director of Graduate Studies and the student's thesis committee. The thesis should be article length and of publishable quality. It should contain a clearly stated problem, relevant data and theoretically informed analysis.

M.A.-only students must complete all coursework and the thesis within a maximum period of six calendar years after admission to the degree.

Students in the M.A.-only program in Historical Archaeology may not apply for the Anthropology Department's Ph.D. program until after the thesis has been successfully defended and final copies deposited in the Office of Graduate Studies and Research.

Degree Requirements for the Doctor of Philosophy with specializations in Historical Archaeology and Historical Anthropology

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)
The doctoral program in Anthropology (M.A./Ph.D. program) is designed for students who wish to specialize in Historical Archaeology or Historical Anthropology and who wish to pursue original, advanced research toward a doctorate.

A separate application is not necessary for financial aid. Financial assistance is also available for summer research. Pending admission, students with national fellowships are welcome to the program. Each student will be evaluated at the end of every academic year. Funding is contingent on satisfactory progress as determined by the department's Graduate Committee. All fees must be paid in accordance with College guidelines to maintain active status in the program.

Students will normally complete three years of full-time graduate course work for the M.A./Ph.D. This consists of 30 credits of Master's-level course work (including 6 credits of ANTH 700) and 36 credits of Ph.D. course work (including 6 credits of ANTH 800).

Students will pursue their studies in either Historical Archaeology or Historical Anthropology. All students entering the M.A./Ph.D. program are required to take 4 core courses: one in each subfield (ANTH 600, 602, 603, 605), plus one additional course in each of the 3 subfields selected for the comprehensive exam by the student(see below). The intent of these requirements is to build general proficiency in the discipline as a

whole. This approach is designed to produce graduates who are maximally equipped to succeed in the job market for teaching positions, which often demand mastery of anthropology as a four-field discipline.

M.A./Ph.D. students who come to the program without a master's degree are required to defend their M.A. theses by the end of their fourth semester. Once students complete their M.A. theses, the thesis committee chair will write a letter to the Graduate Committee summarizing the thesis committee's assessment of the thesis and defense. The Graduate Committee will then evaluate the M.A. thesis in light of the committee's assessment and will determine whether the student should be allowed to advance toward candidacy or awarded a terminal M.A.

Before the beginning of their third year in the program, each student must pass a reading examination in a language of scholarship relevant to their research interests; the language selected should be useful in reading the literature in their field of study.

During the first week of classes of their third year in the M.A./Ph.D. program, all students will take a written comprehensive examination that covers three of the four subdisciplines of anthropology. This examination will be prepared and read by the faculty as a whole. Students who pass the comprehensive examination will form a preliminary dissertation committee in consultation with their advisor. The student will present a draft proposal at a meeting with the committee to plan the content of the qualifying examination. This exam will explore key theoretical concerns and methodological issues related to the dissertation as well as ethnographic, historical and archaeological data that forms a background to their research. Preparation will incorporate a thorough review of the relevant literature and preparation of an extensive bibliography of works to be read. No later than March of their third year of study all students must take an oral qualifying exam conducted by the student's dissertation committee.

By the end of the seventh semester of graduate study, or before embarking on their dissertation research, each student, in cooperation with their advisor and committee, will write and present a dissertation proposal suitable for submission to a funding agency. The proposal will be defended at a meeting open to all faculty members and students in the Anthropology department and any guests they might invite. The defense is evaluated by the student's dissertation committee. Students whose dissertation proposal is passed will be admitted to candidacy (ABD status).

Each candidate for the Ph.D. must submit an acceptable dissertation based on original research and constituting a contribution to scholarly knowledge.

All requirements for the doctoral degree must be completed within a maximum of seven (7) calendar years of the time the student was admitted to the doctoral candidacy (see above).

See the Anthropology Department's Web page, http://www.wm.edu/anthropology, for additional information about requirements and course of study.

Description of Courses

Unless otherwise noted, all courses are graded using standard grading [A, B, C, D, F] scheme (See VI. Grading and Academic Progress in the section entitled 'Graduate Regulations' in this catalog) and may not be repeated for credit (See Repeated Courses requirements in the section entitled 'Graduate Regulations' in this catalog).

525. Applied Anthropology.

Spring (3) Hamada-Connolly.

This seminar introduces basic applied anthropology perspectives and methodology for community research. It combines classroom discussion, empirical fieldwork, data analysis, and ethnographic writing. Topics include statistical analysis, collaborative research,

professional ethics, behavioral observation techniques, interview and survey techniques, report writing, digital representation, policy application, and grant-writing. It introduces quantitative/qualitative research design, data collection, analysis and interpretation used in applied anthropology.

526. Foodways and the Archaeological Record.

Spring (3) Bowen.

A multidisciplinary perspective on how societies procure food. Drawing upon archaeological, historical, and anthropological studies, students will learn about provisioning systems found in foraging, horticultural, agrarian, and industrialized societies. Emphasis will be placed on Great Britain and North America.

527. Native People of Eastern North America.

Spring (3) Bragdon.

This course treats the native people of eastern North America as they have been viewed ethnographically, theoretically and historically. Students will apply anthropological theory to historical and contemporary issues regarding native people of the eastern United States, and develop critical skills through reading, research and writing about these people.

529. Exploring the Afro-American Past.

Fall or Spring (3) Gundaker, Norman.

A study of the commonalities and differences across Afro-America from the U.S. to Brazil. Works in anthropology, history, and literature will be used to explore the nature of historical consciousness within the African Diaspora and diverse ways of understanding the writing about Afro-American pasts.

530. Material Life in African America.

Fall (3) Gundaker.

This seminar explores the world of things that African Americans have made and made their own in what is now the United States from the colonial era through the present. Topics include landscapes of enslavement and freedom, labor practices, architecture, foodways, objects, aesthetics, contexts of production and use, and the theories of material life, expression, and culture through which these topics are studied. [Cross-listed with AMST 518]

532. Maroon Societies.

Fall or Spring (3) Gundaker.

An exploration of the African American communities created by escaped slaves throughout the Americas, from Brazil up through the Caribbean and into the southern United States. Emphasis on the processes by which enslaved Africans from diverse societies created new cultures in the Americas, on the development of these societies through time, and on the present-day status of surviving maroon communities in Suriname and French Guiana, Jamaica, Colombia and elsewhere.

545. Issues in Anthropology.

Fall and Spring (1-3) Staff. This course may be repeated for credit when topics vary.

Students will conduct research in anthropology focused on selected issues and problems such as inequality and justice, the environment, ethnic relations and minorities, war and peace, population, and social changes.

550. Archaeological Conservation (I).

Fall (3) Moyer.

An introduction to the theory and practice of archaeological conservation, including systems of deterioration, treatment, and storage. The first semester emphasizes the material science and technological underpinnings of archaeological artifacts.

551. Archaeological Conservation (II).

Spring (3) Moyer.

In the second semester, students receive instruction and experience in the laboratory treatment of artifacts from 17th to 19th century archaeological sites in North America and the West Indies.

553. Zooarchaeology.

Spring (4) Bowen.

An introduction to the identification and interpretation of animal bones recovered from archaeological sites.

554. Quantitative Research Methods in Anthropology.

Fall (3) Gallivan.

Introduction to the design and implementation of quantitative research in anthropology. Statistical methods covered include those used in describing and interpreting archaeological, biological, ethnographic and linguistic data. The course focuses on exploratory data analysis, probability, sampling, hypothesis testing, correlation and regression.

555. Practicing Cultural Resource Management.

Spring (3) Staff.

This course introduces students to the practice of cultural resource management (contract archaeology), including hands-on experience in planning, proposal preparation, field and laboratory strategies, project management, and the reporting process.

556. Human Skeletal Biology.

Fall or Spring (3) Blakey.

This course covers technical aspects of human identification involving skeletal remains. These techniques include bone and tooth identification, age and sex estimation, and methods for the assessment of nutrition and disease in archaeological populations.

557. The Archaeology of Colonial Williamsburg and Tidewater Virginia.

Spring (3) Brown.

This course examines the archaeological research on sites located in and around Williamsburg, the capital of the colony of Virginia from 1699-1781. The course explores the contributions that archaeological research has made to understanding the development of Jamestown and Williamsburg, in relation to a regional, plantation-based economy and society. Consideration is also given to larger issues surrounding the relative position of Williamsburg and its hinterland within the Atlantic World. Specific comparisons will be made with the development of other English colonies such as Bermuda and Barbados.

558. Caribbean Archaeology.

Fall (3) Smith.

The archaeology of western Atlantic islands for the period 1492-1900 AD. The pre-Columbian background, contact between indigenous and European groups, European settlement and island development will be examined through recent archaeological work on urban settlements, military forts, commercial structures, sugar mills and others.

559. Tsenacomoco: Native Archaeology of the Chesapeake.

Spring (3) Gallivan.

This class explores the "deep history" of Native Chesapeake societies by tracing a 15,000-year sequence resulting in the Algonquian social landscape of "Tsenacomoco". The class considers Pleistocene-era settlement, hunter-forager cultural ecology, Woodland-period migration, agricultural adoption, chiefdom emergence, Native responses to colonialism, and contemporary uses of the Native past.

572. Ethnographic History.

Fall or Spring (3) Bragdon, Glasser, Gallivan.

Critical readings of recent works by anthropologists and historians, with an emphasis on cross-disciplinary theory and method.

584. Collecting and Exhibiting Culture.

Fall or Spring (3) Moretti-Langholtz, Norman.

The process of assembling material artifacts across cultural boundaries. The course will examine the history of field collecting in different parts of the world, questions of cultural ownership, theories of acquisition and preservation used by museums and private collectors, and issues in the exhibiting of both objects and people. Readings will draw mainly on material from Canada, the U.S., Mesoamerica, the Caribbean, Africa, and Europe.

586. Cultural Politics of Art.

Fall or Spring (3) Gundaker.

Exploration of the cultural and political world of art as experienced by artists, museum visitors, gallery owners, teachers, collectors, curators, critics, and charlatans. Class discussions will consider anthropological and art historical perspectives in addressing questions central to both disciplines.

590. Writing and Reading Culture.

Fall or Spring (3) Staff.

Trends in ethnography (and ethnographic history), during the past two decades. Students will begin with a 'classic monograph,' go on to read about the 'crisis' in representation as depicted by Clifford and Marcus, and then devote themselves to a critical analysis of a range of more recent work.

592. Biocultural Anthropology.

Spring (3) Blakey.

Recent advances in the study of interactions between human biology and culture are examined. Biocultural anthropology extends beyond the limitations of evolutionary theory, employing political and economic perspectives on variation in the physiology and health of human populations.

600. Socio-Cultural Theory.

Fall (3) Staff.

The course will discuss major concepts, theories and findings in cultural and social Anthropology. Students will be introduced to the history of thought within the discipline from 19th-century evolutionism to postmodernism. This course includes training in the responsible and ethical conduct of research, as well as discussion of fabrication, falsification, and plagiarism.

602. Biological Anthropology.

Spring (3) Staff.

Anatomy and behavior of nonhuman primates, fossil hominids, and modern human populations are analyzed via theories and methods in biological anthropology. Emphasis is given to construction of models for understanding the evolution of human behavior, focusing on bipedalism, technology, and language.

603. Archaeological Theory.

Spring (3) Gallivan.

An examination of the major concepts and methodological approaches in prehistoric archaeology as background for the understanding of historical archaeology.

604. Archaeological Method.

Spring (3) Staff.

A general introduction to field and laboratory techniques of prehistoric and historical archaeological research.

605. Anthropological Linguistics.

Spring (3) Bragdon.

This course will examine the history and theories of linguistic anthropology. Focus will be on the ways in which linguistics has influenced the development of anthropological theories concerning cognition and practice.

606. Documentary Anthropology.

Fall (3) Bragdon.

Introduction to methods and theories of text analysis for archaeological and anthropological research. Structural, symbolic and cognitive models of culture are presented. Emphasis is on the integration of these models, the use and evaluation of documents by historical archaeologists, and research with primary historical data.

607. Bioarchaeology and the African Diaspora.

Spring (3) Blakey.

This course is a graduate seminar on the use of paleopathological and paleodemographic data derived from human skeletons uncovered at archaeological sites. The historic archaeological sites of the African Diaspora in the Americas provide the comparative examples of the course.

610. Artifacts.

Spring (3) Smith.

An examination of Euro-American ceramics, glassware, tobacco pipes and other portable artifacts of the period c.1600-1900 A.D. Students will learn how to date, identify, and analyze classes of objects from historic archaeological contexts, as well as how to obtain information pertaining to technology, function, and social and economic status.

611. Historical Archaeology.

Spring (3) Brown, Smith.

An historical review of the method and theory of American historical archaeology, with emphasis upon specific research strategies and accomplishments in relation to the broader study of American material culture. The role of historical archaeology within historic preservation, cultural resource management, and historic museums will also be considered.

612. American Material Culture.

Fall (3) Staff.

This course examines American life and culture, past and present, through its material artifacts. It focuses on the historical development and behavioral aspects of American material culture as revealed by archaeological and documentary research. The relationship of material culture including vernacular architecture, ceramics, glass, mortuary art, and other household and industrial artifacts, and various social dimensions, such as social class, gender and ethnicity, will be explored.

613. Historical Archaeology of the American South.

Spring (3) Staff.

The course tests the notion of Southern uniqueness and Southern identity against an array of archaeological evidence dating from the earliest colonial settlements through to the archaeology of the Depression era.

615. North American Prehistory.

Spring (3) Gallivan.

A seminar on the prehistory of North America north of Mexico. Topics covered are: the peopling of North America, the cultural development of indigenous peoples, the archaeology of Native Americans, and the cultural processes that attempt to explain North American culture history.

617. Special Topics in Anthropology.

Fall and Spring (1-4,1-4) Staff.

625. Field Work in Archaeology.

Summer (6) Brown, Gallivan.

The application of archaeological methods to an individual field project within the framework of a supervised archaeological field program.

630. Writing and Publishing in Anthropology.

Fall or Spring (3) Staff.

A practical introduction to the whole range of writing and publishing activities engaged in by anthropologists, this course will cover techniques, conventions, and practices regarding grant proposals, book reviews, CVs, articles, abstracts, books, research reports, and job applications. We will consider submission procedures, the editing process, design considerations, distribution and marketing, legal issues, and ethical questions. The intent will be to demystify an aspect of the life of professional anthropologists that students are often left to discover on their own. In addition to substantial readings, there will be a writing assignment every week.

690. Directed Research.

Fall and Spring (3) Staff. This course may be repeated for credit.

A program of extensive reading, writing and discussion in a special area of Anthropology for students entering the M.A./Ph.D. program without a previous graduate degree. Students accepted for this course will arrange their program of study with an appropriate faculty advisor.

695. Independent Study in Anthropology.

Fall and Spring (3) Staff. Permission of the Director of Graduate Studies required. This course may be repeated.

An independent study course involving reading, writing, and discussion on a relevant topic.

700. Thesis.

Fall and Spring (hours and credits to be arranged) Staff. This course may be repeated for credit.

Directed study for the master's thesis.

701. Issues in Historical Anthropology.

Fall and Spring (3) Staff. This course may be repeated for credit if there is no duplication of material.

An examination of selected topics in cultural anthropology.

702. Issues in Historical Archaeology.

Fall and Spring (3) Staff. This course may be repeated for credit if there is no duplication of material.

An examination of selected topics in historical archaeology.

790. Independent Study.

Fall and Spring (3) Staff. This course may be repeated for credit.

A program of extensive reading, writing and discussion in a special area of historical anthropology or historical archaeology for the Ph.D. student. Students accepted for this course will arrange their program of study with an appropriate faculty advisor.

800. Ph.D. Dissertation.

Fall and Spring (hours and credits to be arranged) Staff. This course may be repeated for credit.

Directed study for the doctoral dissertation.

Summer Field Schools in Archaeology

The Department of Anthropology will offer summer field schools in archaeology focusing on historical sites in Colonial Williamsburg and contact-period villages in Tidewater Virginia. Other research opportunities will be tied to faculty projects in the Caribbean, Bermuda and the American South. Graduate students will enroll in ANTH 625.

APPLIED SCIENCE DEPARTMENT

In Applied Science we use the tools, the techniques, and the understanding involved in a wide range of sciences in order to solve complex scientific and technical problems. The Department has state-of-the-art facilities in (1) theoretical and computational analysis of physical and biological systems, (2) materials synthesis and characterization of nanostructures, polymers, inorganics, and composites, (3) modification and evaluation of interfaces, (4) processing control of materials and surfaces, and (5) imaging technology and theory from nano to planetary scales. The core faculty of Applied Science is augmented by a large number of affiliates from the physics, chemistry, biology, psychology, computer science and mathematics departments as well as from nearby Jefferson Lab and NASA Langley. Applied Science students enjoy:

- *An academic program tailored to each student's needs.* The coursework component of each student's curriculum is highly flexible and is planned individually with his or her faculty advisory committee.
- *Outstanding research opportunities in internationally recognized laboratories.* Applied Science students perform their thesis research in the laboratories at William and Mary, Jefferson Lab, and NASA Langley.
- *Yearly stipends and full-tuition scholarships.* The Research Assistant stipend is $22,000 plus tuition and health insurance.

Advanced students help coordinate the seminar program and travel to present achievements in research. The most inventive of our students receive U.S. patents by the time they are awarded their degrees. The graduate student association, pizza seminars, and intramural sports provide casual settings for further involvement in campus life.

Faculty

CHAIR **Mark K. Hinders** Professor (Ph.D., Boston University).

GRADUATE DIRECTOR **Gunter Luepke** Professor (Ph.D., University of Gottingen).

PROFESSORS **Michael J. Kelley** (Ph.D., Rensselaer Polytechnic Institute), **R. Alejandra Lukaszew** (Virginia Microelectronics Consortium Professor of Applied Science and Physics) (Ph.D., Wayne State University), **Dennis M. Manos** (CSX Professor of Applied Science) (Ph.D., Ohio State University), and **Robert L. Vold** (Ph.D., University of Illinois, Urbana).

ASSOCIATE PROFESSORS **Christopher A. Del Negro** (Ph.D., University of California, Los Angeles), and **Gregory D. Smith** (Ph.D., University of California, Davis).

ASSISTANT PROFESSORS **Hannes C. Schniepp** (Dr. sc. nat., Swiss Federal Institute of Technology - ETH), and **Leah B. Shaw** (Ph.D., Cornell University).

COURTESY PROFESSORS **Eric L. Bradley** (Biology) (Ph.D., University of California, Santa Barbara), **Charles R. Johnson** (Mathematics) (Ph.D., California Institute of Technology), **Rex K. Kincaid** (Mathematics) (Ph.D., Purdue University), **William J. Kossler** (Physics) (Ph.D., Princeton University), **Henry Krakauer** (Physics) (Ph.D., Brandeis University), **David E. Kranbuehl** (Chemistry) (Ph.D., University of Wisconsin), **Lawrence M. Leemis** (Mathematics) (Ph.D., Purdue University), **Chi-Kwong Li** (Mathematics) (Ph.D., University of Hong Kong), **John C. Poutsma** (Chemistry) (Ph.D., Purdue University), **Margaret S. Saha** (Biology) (Ph.D., University of Virginia), **John P. Swaddle** (Biology) (Ph.D., University of Bristol, U.K.), **Eugene R. Tracy** (Physics) (Ph.D., University of Maryland), and **Shiwei Zhang** (Physics) (Ph.D., Cornell University).

ADJUNCT PROFESSORS **Eric I. Madaras** (Ph.D., Washington University), **Robert J. Mattauch** (Ph.D., North Carolina State University), **Gregory B. Tait** (Ph.D., Johns Hopkins University), **Gwyn P. Williams** (Ph.D., Sheffield University) and **William P. Winfree** (Ph.D., College of William and Mary).

COURTESY ASSOCIATE PROFESSORS **Joshua A. Burk** (Psychology) (Ph.D., University of New Hampshire) and **Sarah Day** (Mathematics) (Ph.D., Georgia Institute of Technology).

COURTESY ASSISTANT PROFESSORS **Paul D. Kieffaber** (Psychology) (Ph.D., Indiana University, Bloomington), **Michael D. LaMar** (Ph.D., University of Texas at Austin) and **Jianjun P. Tian** (Mathematics) (Ph.D., University of California, Riverside).

ADJUNCT ASSISTANT PROFESSORS **Marco A. Huertas** (Ph.D., College of William and Mary), **Aurora E. Kerscher** (Ph.D., Johns Hopkins University), **John E. Lynch** (Ph.D., College of William and Mary), **Walter A. Silva** (Ph.D., College of William and Mary), **Andrew Weisenberger** (Ph.D., College of William and Mary), and **Russel A. Wincheski** (Ph.D., College of William and Mary).

DISTINGUISHED VISITING PROFESSOR **Shenggang Liu** (Ph.D., Academician of Chinese Academy of Science).

RESEARCH PROFESSORS **Joel S. Levine** (Ph.D., University of Michigan), and **Ronald A. Outlaw** (Ph.D., Virginia Polytechnic Institute).

RESEARCH ASSISTANT PROFESSOR **Saskia Mordijck** (Ph.D., University of California, San Diego).

RESEARCH SCIENTIST **Silvina Pagola** (D. Chem. Sci., National University of Córdoba).

RESEARCH ASSOCIATES **Cesar Clavero** (Ph.D., University Autonoma of Madrid–Spain), and **Maxim Shkarayev** (Ph.D., University of Arizona and B.S., College of William and Mary).

General Description

The Department of Applied Science is an interdisciplinary graduate department that offers M.S. and Ph.D. degrees in the physical and natural sciences. The program is offered by the core faculty of Applied Science in cooperation with affiliated faculty from the Departments of Biology, Chemistry, Computer Science, Mathematics, Physics, Psychology and the Virginia Institute of Marine Science (VIMS), as well as from the NASA Langley Research Center (LaRC) and the Thomas Jefferson National Accelerator Facility (JLab).

Faculty research interests include biomacromolecules, cell biology, computational neuroscience, electronic materials, epidemic modeling, in-situ sensing techniques, laser spectroscopy, medical imaging, molecular self-assembly, nanotechnology, neurophysiology, nondestructive evaluation, novel chemical instrumental techniques, physical and chemical properties of polymers, polymer characterization techniques, robotics, solid state nuclear magnetic resonance and surface science. Applied Science students perform their thesis and dissertation research in the laboratories at William and Mary, Jefferson Lab, and LaRC. The coursework component of each student's curriculum is highly flexible and is planned in consultation with his or her faculty advisory committee. Prospective students are strongly encouraged to open an email dialog with those faculty whose research is most of interest.

Admission

The Department assumes that students entering the program have had an undergraduate concentration in a physical or natural science, mathematics, or engineering discipline. Information about the Department and applications for admission can be obtained from our web page http://as.wm.edu.

Each applicant must submit the results of the general test and one subject test from the Graduate Record Examinations. Students from non-English speaking countries must submit TOEFL scores and are strongly encouraged to make a Skype appointment with department admissions staff. Applications must be completed by 5:00 p.m. the first Friday of February for entrance into the Department Fall semester. Spring semester applications must be completed by 5:00 p.m. the second Friday in October.

Department Requirements for the Degrees of Master of Science and Doctor of Philosophy

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)
The student and his or her advisory committee will plan a coherent degree program, including required coursework that best suits the student's educational goals. For most students this will include the department's core sequence APSC 603, 604, 607, 608. Due to the different backgrounds, previous preparation, and career goals, not all Applied Science students will take the full core sequence. However, unless otherwise exempted by the department, students will be responsible for the material covered in the entire core. The Applied Science Faculty must approve thesis and dissertation programs. A student in the Department must maintain a B average in order to remain in good standing.

Degree Requirements for the Master of Science

The student must successfully complete the program of courses approved by the Applied Science Faculty. The requirements for this degree may be met either by: 1) 24 hours of graduate credit, and an original thesis approved by the student's advisory committee and defended in an oral examination; or 2) 32 hours of graduate credit to include APSC 710.

Degree Requirements for the Doctor of Philosophy

The candidate must successfully complete the program of courses approved by the Applied Science Faculty. He or she must pass a comprehensive qualifying examination designed to demonstrate competence in his or her field of study. The candidate must carry out a substantial original research project. The dissertation describing this research must be approved by the student's advisory committee and successfully defended in a public oral examination. Students have seven (7) years from the qualifying exam pass date to complete the degree requirements. Extensions to this time limit are considered according to the Extensions Policy as outlined at the front of the catalog.

Description of Courses

(See Explanation of Course Descriptions)

Many of the courses for Applied Science are described in Chemistry, Computer Science, Mathematics, and Physics sections of this catalog. Wherever a William and Mary course is specified as a prerequisite or corequisite, it is understood that an equivalent course, taken at another institution, may be substituted. Typically, Readings in Applied Science differs from Topics in Applied Science in that a topic implies regular meetings in a course/lecture format.

Unless otherwise noted, all courses are graded using standard grading [A, B, C, D, F] scheme (See VI. Grading and Academic Progress in the section entitled 'Graduate Regulations' in this catalog) and may not be repeated for credit (See Repeated Courses requirements in the section entitled 'Graduate Regulations' in this catalog).

601. Computational Methods for Molecular Dynamics.

Spring (3) Prerequisites: Working knowledge of elementary statistical mechanics, ability to program in Fortran and/or C, access to at least a Pentium-level computer, and consent of the instructor.

This course is intended to give graduate students the ability to design and implement molecular dynamic simulations, which are useful in their research projects. Topics to be covered include Newtonian and Langevin dynamics, periodic boundary conditions, constraint forces, correlation functions, and selected applications in chemistry and physics.

603. Introduction to Scientific Research I.

Fall (2) Prerequisite: Consent of the instructor.

This course sequence, designed for the first year graduate student, acquaints them with the range and scope of research opportunities in Applied Science and the skills and knowledge necessary to function as a professional researcher. Provides training in the responsible and ethical conduct of research, including discussions of fabrication, falsification, and plagiarism.

604. Introduction to Scientific Research II.

Spring (2) Prerequisite: APSC 603 and consent of instructor.

Continuation of APSC 603.

607. Mathematical and Computational Methods I.

Fall (4).

This course is a survey of important mathematical principles and techniques used to solve problems encountered in a variety of scientific disciplines and industrial applications. These disciplines and applications include chemistry, physics, and materials science. Computation is a major aspect of the course and will occupy a substantial portion of the curriculum. Computational instruction will include both analytical and numerical techniques and will make use of symbolic and numerical software packages.

608. Mathematical and Computational Methods II.

Spring (4) Prerequisite: APSC 607 or consent of instructor.

Continuation of APSC 607.

621. Applied Solid State Science.

Fall (4).

Students learn advanced concepts for bonding, macromolecular ordering, and structure-property relationships in materials. The course begins with macromolecular bonding as it relates to material dipoles, crystallographic ordering, and surfaces/interfaces. The second unit focuses on processing and morphology involving metals, ceramics, polymers, composites, adhesives, plasticizes, and solvents. The final portion of the course considers material interactions (with other materials or with electromagnetic radiation). Feynman's Coupled States approach is invoked for determining energies of electronic states arising in solid materials. Reduction/oxidation potentials, acidity/basicity, corrosion, adsorption, adhesion, electronic mobility/polarizability, and optical phenomenon are discussed in the context of the perturbation or interaction of electronic states.

622. Quantitative Materials Characterization.

Spring (4) Prerequisite: APSC 621.

This course presents a wide variety of means by which the properties and characteristics of materials can be experimentally determined. These include electrical, optical, acoustic, thermal, spectroscopic, and resonance methods. The objective is to discuss these separate means under the umbrella of fundamentals of interactions of matter with particles and waves. The course will address issues of data acquisition, such as sampling, discretization, and signal processing. Applications of these techniques to research in materials development, synthesis, processing, and in situ manufacturing.

623. Materials Science of Surfaces and Interfaces.

Fall (3) Prerequisite: consent of instructor.

Fundamental and applied aspects of metal, inorganic, polymer and other organic surfaces. Solid/solid, solid/liquid and solid/vapor interfaces. Their structure and defects, thermodynamics, reactivity, electronic and mechanical properties. Applications depend on class interests, but have previously included microelectronics, soils, catalysis, colloids, composites, environment sensitive mechanical behavior, UHV single crystal studies, materials durability, batteries and fuel cells, vacuum science and technology, and surface bioactivity.

625. Device Processing.

Fall (3) Prerequisites: CHEM 302 or PHYS 313 and MATH 302.

This course is an introduction to the applied science of thin film devices and manufacturing. The course covers vacuum physics and technology, microstructure in thin film nucleation and growth, film deposition methods, surface implantation, and lithography and patterning. Plasma, ion, and neutral atom interactions with solids are described. The fundamentals of the electronic properties of thin films and semiconductor device physics will be presented, including the relationship between processing methods, device damage, and device performance.

627. Lasers in Medicine, Science, and Technology.

Spring (3) Prerequisites: PHYS 101/102 or PHYS 107/108.

A basis for understanding and use of lasers and modern optics in medicine, science, and technology. Particularly interaction of laser beams with biological materials and tissue, refractive surgery, spectroscopic applications including Raman and fluorescence imaging, laser remote sensing, and laser safety.

631. Applied Cellular Neuroscience.

Fall (3) Prerequisite: consent of instructor.

We examine cellular neurophysiology including topics such as: membrane potentials, ion channels and permeability, electrical signaling and cable properties, synaptic transmission, and neuromodulation. We apply these concepts to motor control, homeostatic regulation, and special senses.

632. Applied Systems Neuroscience.

Spring (3) Prerequisite: APSC 631 or consent of instructor.

We explore how behaviors emerge through multiple levels of organization in the nervous system. Topics include: cranial and spinal reflexes, central pattern generator networks, the neural control of breathing, the neural control of appetite, body weight, and obesity, and finally, the neuropharmacology of nicotine addiction.

637. Introduction to Optoelectronics.

Spring (3) Prerequisites: PHYS 621, PHYS 741, and APSC 627 are recommended.

This course is a comprehensive introduction to waveguide optics and photonics in semiconductor structures, and provides the basic knowledge for understanding the concepts of optoelectronic devices for transmission and processing of optical signals. These optical communications engineering devices are becoming increasingly important for optical disk storage systems, optical chip-chip interconnections and optical fiber transmission and exchange.

647. Correlated Electron Systems.

Fall (3) Prerequisites: PHYS 621, and PHYS 741 are recommended.

This course is concerned with the microscopic aspects of magnetic and superconducting states encountered in nature, their properties, and possible technological applications. The following topics will be discussed: Itinerant Electron Magnetism, Spin Waves, BCS Theory of Superconductors, Vortices in Type II Superconductors, Josephson Effect, and Quantum Interferometers. The course can be understood with minimal prerequisites and the mathematical techniques used are fairly elementary. However a basic knowledge of spin and angular momentum is essential, since quantum mechanics lies at the heart of both magnetism and superconductivity.

651. Cellular Biophysics and Modeling.

Fall (3) Prerequisites: MATH 111 and 112 or MATH 113.

This course is an introduction to simulation and modeling of dynamic phenomena in cell biology and neuroscience. Topics covered include membrane transport and diffusion, the biophysics of excitable membranes, the gating of voltage and ligandgated ion channels, intracellular calcium signaling, and electrical bursting in neurons and other cell types.

652. Self-organization in Life and Chemical Sciences.

Spring (3).

Here we investigate self-organization and complex collective behaviors that emerge from simple dynamical principles in a variety of living and chemical systems. We consider, for example, oscillatory chemical reactions, single-celled organisms and their communal behaviors, as well as the spread of HIV in human populations using agent-based computer simulation to model and analyze these systems. The course culminates in a final research project wherein students, in consultation with the instructors, develop and analyze their own original model.

653. Cellular Signaling in MATLAB.

Spring (3).

An introduction to computer modeling of cell signal transduction, that is, how cells convert external stimuli such as hormones and neurotransmitters into an integrated and coordinated intracellular response. Topics covered include: binding of ligand to receptors, ion channels and electrical signals, metabotropic signaling (G protein coupled receptors, effector molecules, second messengers), intracellular calcium dynamics, and sensory transduction in the visual and auditory systems. Each topic will be introduced from the biological perspective and studied by simulation using MATLAB. Prior experience with mathematical and computer modeling is not required.

654. Bioinformatics and Molecular Evolution.

Spring (3) Prerequisite: MATH 112 or 113, BIOL 203, or consent of instructor.

An introduction to computational molecular biology and molecular evolution including nucleotide and amino acid sequence comparison, DNA fragment assembly, phylogenetic tree construction and inference, RNA and protein secondary structure prediction and substitution models of sequence evolution. [Cross-listed with BIOL 454]

671. Solid State Nuclear Magnetic Resonance.

Fall (3) Prerequisites: undergraduate (junior level) quantum mechanics. Corequisite: APSC 607.

This course is intended for graduate students who are considering or are engaged in Ph.D. thesis work in magnetic resonance. Topics to be covered include: classical and quantum descriptions of magnetic resonance in bulk matter, Fourier transform techniques, orientation-dependent spin interactions, magic angle spinning, multi-dimensional NMR, and applications in materials characterization.

672. Applied Quantum Mechanics.

Spring (3) Prerequisite: APSC 607. Corequisite: APSC 608.

This course is intended for first year graduate students. Topics to be covered include: the postulates of quantum mechanics, exact and approximate solutions of Schroedingers equation, methods of electronic structure calculations for discrete molecules and semiconductors, quantum tunneling and its relevance to scanning tunneling microscopy (STM) and atomic force microscopy (AFM), and quantum descriptions of radio frequency, infrared, and optical spectroscopic methods of materials characterization.

690. Readings in Applied Science.

Fall, Spring and Summer (Hours and credits to be arranged). This course may be repeated for credit.

Subject and text to be selected by the instructor and the students.

691. Topics in Applied Science.

Fall, Spring and Summer (Hours and credits to be arranged).

Subject and text to be selected by the instructor and the students.

692. Colloquium in Applied Science.

Fall and Spring (variable - 1 to 3 credits).

694. Internship.

Fall, Spring and Summer (Hours and credits to be arranged). This course may be repeated for credit. Approval of the Director of Applied Science is required prior to enrollment.

Research in accelerator science, atmospheric science, polymer science, or quantitative materials characterization at the NASA-Langley Research Center in Hampton or the Thomas Jefferson National Laboratory (TJNAF) in Newport News.

695. Research.

Fall, Spring and Summer (Hours and credits to be arranged). This course may be repeated for credit.

700. Thesis.

Fall, Spring and Summer (Hours and credits to be arranged). This course may be repeated for credit.

701. Fundamentals of Data Acquisition and Signal Processing.

Fall (3) Prerequisites: MATH 211, 212, and 302.

Data acquisition of signals; sampling and discretization; the sampling theorem; undersampling and aliasing; convolution; correlation; frequent domain representation and analysis; discrete Fourier transform and FFT spectrum and filters; power spectrum estimation; z-transform and time-representation and analysis; wave shaping.

710. Research Project.

Fall (2).

Students will select a faculty advisor in their area of research interest, undertake a research project, and write a paper describing their research. This course is normally taken after a student has completed 18 credit hours toward the MS degree. However, students are advised to begin the process of selecting a research area and an advisor, and to begin meeting with the advisor before completing 18 credits. It is not open to students who receive credit for APSC 700.

Students wishing to register for APSC 710 must submit a short abstract describing their research project to the Graduate Director at least two weeks before the class is scheduled to begin. The faculty member who will direct the research must sign this abstract. Any tenure track faculty may direct a research project. Any student, who is unable to convince any other faculty member to be their APSC 710 advisor, will be assigned to the Applied Science graduate program director. Any student in this situation must still submit a short abstract to the Graduate Director for approval at least two weeks before the semester begins. Completion of the course includes completion of the project, writing a report and receiving approval from the advisor. All requirements must be completed by the last day of classes (not of the exam period) for the student to receive credit in a given semester.

721. Metallic Materials Characterization.

Fall (3) Prerequisite: MATH 302.

Examination of the intrinsic structure and defective nature of materials, particularly metals and metal composites, with emphasis on structure, strengthening mechanisms, defect growth, response to temperature, and environmental deterioration.

722. Quantitative Nondestructive Evaluation I.

Fall (3).

An overview of techniques and physical principles for determining material properties and detecting and characterizing defects in materials. Ultrasonic and thermographic methods receive special emphasis.

723. Quantitative Nondestructive Evaluation II.

Spring (3) Prerequisite: APSC 722.

This course is a continuation of APSC 722, and covers nondestructive evaluation techniques such as acoustic microscopy, optical, eddy current and radiographic NDE.

726. Solid Surfaces and Interfaces.

Spring (3) Prerequisite: APSC 625.

An extension and continuation of the discussion of physical and chemical deposition, growth, and etching of surfaces. Detailed study of plasma-surface interactions of importance for material processing. Diagnostics of plasma, gas phase reactors and solid surfaces. Discussion of plasma sources and diagnostics including parallel plate, electron cyclotron resonance, helicon, lower-hybrid, and other advanced geometries, and the science and technology of manufacturing uses of surface modification methods.

732. Thin Film Deposition and Nanostructure Synthesis.

Spring (3) Prerequisites: APSC 525, 607 or consent of instructor.

An advanced discussion of thin film and nanostructure formation techniques at a level commensurate with an advanced graduate course. The course content will focus on the fundamentals of the techniques rather than discussing currently available commercial technology. Topics covered will usually include evaporation, sputtering, chemical vapor deposition, atomic layer deposition, and laser ablation. Some sections may be switched for other topics based on class interest.

751. Mathematical Physiology I.

Fall (3) Prerequisite: APSC 651 or consent of instructor.

Computational and mathematical aspects of electrophysiology and cellular biophysics emphasizing stochastic and spatial modeling applied to cell signal transduction, the dynamics of intracellular calcium, and the visual neurosciences.

752. Mathematical Physiology II.

Spring (3) Prerequisite: APSC 751 or consent of instructor.

This course is a continuation of APSC 751 Mathematical Physiology I.

755. Population Dynamics.

Spring (3).

An introduction to population dynamics and bifurcation theory. Classic models including the logistic map, predator-prey systems, and epidemic models will be used to motivate dynamics concepts such as stability analysis, bifurcations, chaos, and Lyapunov exponents. Additional topics may include time delay and reaction-diffusion systems.

764. High Performance Composites.

Spring (3) Prerequisite or corequisite: APSC 511 or 512.

Fundamental aspects of high performance composite materials. Topics include organic, inorganic, and carbon fiber reinforcements; fiber/resin interfaces; epoxy and other thermoset matrices; thermoplastic and metal matrices; lamina and laminate properties; static and dynamic mechanical tests; failure and damage tolerance; processing; nondestructive evaluation; resin/composite property relationships; and applications.

768. Polymer III - Special Topics in Polymer Chemistry.

Spring (2) Prerequisites: APSC 511 and 512.

The students are given a topic relating to Polymer Chemistry. After reviewing the literature on their subject the students are required to present two, one hour, lectures instructing the rest of the class on the material they have reviewed. Typical polymer topics to be covered include liquid crystalline polymers, birefringence, wide and small angle x-ray scattering, neutron diffraction, and other characterization techniques.

772. Tensor Interaction in Magnetic Resonance.

Spring (3) Prerequisites: APSC 671 or consent of instructor.

This course is intended for graduate students who have begun Ph.D. thesis work in magnetic resonance. Topics to be covered include: angular momentum theory, spherical representation of tensors, the Wigner-Eckart theorem and matrix elements of tensor operators, operator bases for representing the spin density matrix, and the theory and applications of spin relaxation.

776. Acoustic Wave Propagation in Solids.

Spring (3) Prerequisite: APSC 722.

Wave propagation in solids with emphasis on the evaluation of materials and defects. Linear and non-linear wave propagation, mode analysis and mixing, reflection and refraction at interfaces, and wave scattering from defects in isotropic and anisotropic media will be discussed, along with the relationship between wave behavior and the reconstruction of material constitutive equations. The course also will describe the practical aspects of the generation and detection of acoustic waves for non-destructive evaluation of materials.

782. Measurement of Material Properties.

Spring (3) Prerequisite: APSC 721 or consent of instructor.

An introduction to the principles and techniques of measuring physical and mechanical material properties. Topics include optical, acoustic and electron microscopies (SEM, TEM, SAM, STM); x-ray analysis (diffractometer, Laue camera, EDS and WDS systems); and mechanical testing (tension, creep, hardness, fatigue, fracture toughness and corrosion).

784. Imaging Methods.

Spring (3) Prerequisite: consent of instructor.

Fundamentals and applications of the two complementary families of imaging techniques: optical microscopy and scanning probe methods. Topics covered include geometric and wave optics, optical imaging, basic forms of light–matter interaction, all major optical microscopy modes (including fluorescence and confocal), interfacial forces, atomic force microscopy, scanning tunneling microscopy, and near-field optics.

785. Acoustic and EM Scattering.

Fall (3) Prerequisite: APSC 723.

Acoustic, electromagnetic and elastic wave scattering for materials characterization and remote sensing. Subjects to be covered are: field equations, boundary conditions, Green's functions; integral representations and integral equations, scattering amplitude and scattering matrices; plane, spherical and cylindrical scalar and vector wave functions; scattering of waves by spheres and cylinders; inverse scattering techniques.

790. Readings in Applied Science.

Fall, Spring and Summer (Hours and credits to be arranged).

Subject and text to be selected by the instructor and students.

791. Topics in Applied Science.

Fall, Spring and Summer (Hours and credits to be arranged).

Subject and text to be selected by the instructor and students.

792. Colloquium in Applied Science.

Fall and Spring (variable - 1 to 3 credits).

794. Internship.

Fall, Spring and Summer (Hours and credits to be arranged). Approval of the Chair of Applied Science is required prior to enrollment.

Research in accelerator science, atmospheric science, polymer science, or quantitative materials characterization at the NASA-Langley Research Center in Hampton or the Thomas Jefferson Labs (TJNAF) in Newport News.

795. Research.

Fall, Spring and Summer (Hours and credits to be arranged).

800. Doctoral Dissertation.

Fall, Spring and Summer (Hours and credits to be arranged). This course may be repeated for credit.

BIOLOGY DEPARTMENT

The Department of Biology at William and Mary offers a two-year, research-intensive master's program where students are supported by teaching assistantships and full tuition waivers. A master's degree can provide research experience and specialized training before entering a Ph.D. program or it can be an end in itself. Students with advanced training, one or two publications, and a strong laboratory or field research experience are in demand in biotech, pharmaceuticals, resource management, and environmental consulting. Recent grads are pursuing Ph.D.'s at Duke, UC Davis, Johns Hopkins, and University of Toronto.

The goals of the Biology graduate program are to:

- Generate a productive academic community of students dedicated to performing high quality, publishable research within a two-year program.
- Produce graduates with both specialized training in their chosen sub-disciplines as well as communication skills to effectively function within a broad-based scientific community.
- Equip students with a range of research and teaching proficiencies that will significantly enhance their scientific or professional career opportunities.
- Foster close academic interactions between faculty and graduate students.

Our graduate students are part of an active community of scholars, where they learn critical analysis of scientific publications, field and laboratory techniques, and skills in disseminating their research results. Most of our students pursue a master's of science, culminating in a thesis defense.

Strengths of the department include molecular, cellular, and developmental biology; physiology, behavior, and neuroscience; and evolution, ecology, and conservation. With a low student to faculty ratio (approximately 8-10 new students each year with 22 full-time faculty), we can offer an intimate and highly personalized research and education experience rarely attainable at larger universities. Also, our graduate students often work closely with and mentor undergraduates, providing numerous informal teaching and personal development opportunities.

Faculty

CHAIR **Lizabeth A. Allison** Professor (Ph.D., Washington).
GRADUATE DIRECTOR **Randolph M. Chambers** Professor (Ph.D., Virginia).
PROFESSORS **Eric L. Bradley** (Ph.D., California at Santa Barbara), **Daniel A. Cristol** (Ph.D., Indiana at Bloomington), **Norman J. Fashing** (Ph.D., Kansas), **John D. Griffin** (Ph.D., Ohio State), **Paul D. Heideman** (Ph.D., Michigan), **Margaret S. Saha** (Ph.D., Virginia), **S. Laurie Sanderson** (Ph.D., Harvard), and **John P. Swaddle** (Ph.D., University of Bristol, U.K.).
ASSOCIATE PROFESSORS **Gregory M. Capelli** (Ph.D., Wisconsin), **Martha A. Case** (Ph.D., Michigan State), **Mark H. Forsyth** (Ph.D., Connecticut), **Diane C. Shakes** (Ph.D., Johns Hopkins), **Matthew Wawersik** (Ph.D., Johns Hopkins), and **Patty Zwollo** (Ph.D., University of Utrecht).
ASSISTANT PROFESSORS **Jonathan D. Allen** (Ph.D., North Carolina at Chapel Hill), **Eric M. Engstrom** (Ph.D., Stanford), **Shantá D. Hinton** (Ph.D., Howard University), **Oliver Kerscher** (Ph.D., Johns Hopkins), **Michael Drew LaMar** (Ph.D., Texas at Austin), **Matthias Leu** (Ph.D., Washington), and **Kurt E. Williamson** (Ph.D., University of Delaware).
EMERITUS PROFESSORS **Ruth A. Beck** (M.Ed., Virginia), **Robert E.L. Black** (Ph.D., University of Washington), **Sharon T. Broadwater** (Ph.D., William and Mary), **Garnett R. Brooks, Jr.** (Ph.D., University of Florida), **Mitchell A. Byrd** (Ph.D., Virginia Polytechnic), **George W. Gilchrist** (Ph.D., Washington), **Bruce S. Grant** (Ph.D., North Carolina State), **Gustav Hall** (Ph.D., Indiana University), **Stanton F. Hoegerman** (Ph.D., North Carolina State), **Martin C. Mathes** (Ph.D., Maryland), **Joseph L. Scott** (Ph.D., California at Irvine), **Stewart A. Ware** (Ph.D., Vanderbilt), and **Lawrence L. Wiseman** (Ph.D., Princeton).
RESEARCH PROFESSOR **Bryan D. Watts** (Ph.D., University of Georgia).
EMERITUS RESEARCH ASSOCIATE PROFESSOR **Donna M.E. Ware** (Ph.D., Vanderbilt).
VISITING ASSISTANT PROFESSORS **Sarah M. Glaser** (Ph.D., Scripps), **Helen A. Murphy** (Ph.D., Pennsylvania), and **Beverly Sher** (Ph.D., California Institute of Technology).
INSTRUCTORS **Penny L. Sadler** (Ph.D., University of Houston), and **Bill D. Saunders** (M.A., William and Mary).

General Description

The Biology graduate program generates a close-knit academic community of productive students dedicated to performing high quality, publishable research. We produce graduates with both specialized training in their chosen sub-disciplines as well as communication and teaching skills to effectively function within a broad-based scientific community. Graduate research opportunities exist in three broad areas: molecular, cellular and developmental biology; physiology, behavior and neuroscience; and evolution, ecology and conservation.

Admission

The department requires the General GRE and requests the Biology GRE for non-traditional applicants.

Degree Requirements for the Master of Science – Thesis Program

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)
Each student must have a thesis committee consisting of a major advisor and at least two other faculty members from the department. This committee will be responsible for supervising the student's research, advising the student regarding coursework and other aspects of the program, and administering a final oral exam at the time of the thesis defense.

In addition to at least 1 credit of BIOL 700 (Thesis) and 9 credits of BIOL 695 (Gradu-

ate Research), a M.S. candidate must complete 15 semester hours of courses numbered either in the 500s or 600s, with a grade average of 'B' or better. Within the 15 semester hours of courses, every student must successfully complete BIOL 601 (Introduction to Graduate Studies) during their first year in the program. Students must also register for at least one credit of Colloquium (BIOL 682). Thesis students are strongly encouraged to complete their course requirements before the beginning of their fourth semester.

Each student must pass a Graduate Student Qualifying Examination covering basic and advanced principles of biology. The exam is given in the student's second semester. Details of the examination and other procedures are provided in the Biology Department Graduate Handbook.

Each student must also complete a research thesis approved by the committee. The work must be presented in a seminar open to all members of the department; the seminar is followed by an oral examination administered by the committee. Students who wish to work with a specific faculty member are encouraged to contact him or her prior to entering the program.

A minimum residency period of one year is required.

Degree Requirements for the Master of Arts – Non-Thesis Program

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)
Non-thesis M.A. students must complete 32 semester hours of courses at least 20 of which must be numbered in the 600s, with a grade average of 'B' or better. As part of the 32 semester hours, M.A. students must successfully complete BIOL 601 during their first year in the program. Students must also register for at least one credit of Colloquium (BIOL 682).

M.A. students may take up to 3 credits of research, as BIOL 690 or BIOL 680 (Advanced Topics). M.A. students must also pass a Graduate Student Qualifying Examination.

General Description

With the approval of his or her committee, a student registered in the M.S. program may take up to 6 credits in other departments. M.A. students may take up to 12 credits in other departments. Depending on background and preparation, a student may be additionally required to take one or more undergraduate courses that will not count toward the degree.

Teaching Assistantships will be awarded without reference to track. Both M.S. and M.A. students will be eligible for 4 consecutive semesters of support as long as they remain in good standing. M.A. students are not eligible for summer support. All students receiving an Assistantship may not register for more than 12 course credits.

By the beginning of their second semester, M.S. students must have established a thesis committee. After this date, a change may be made only upon approval of the Graduate Committee. Permission for a M.S. student to change to the M.A. program will be given only under extraordinary circumstances and will require repayment of funds received by the student in support of summer research.

For additional information regarding requirements, consult the Department of Biology Graduate Handbook (available upon request). For information concerning the Cooperative Program in Secondary School Teaching with the School of Education write to the School of Education, College of William and Mary.

Description of Courses

Unless otherwise noted, all courses are graded using standard grading [A, B, C, D, F] scheme (See VI. Grading and Academic Progress in the section entitled 'Graduate Regulations' in this catalog) and may not be repeated for credit (See Repeated Courses requirements in the section entitled 'Graduate Regulations' in this catalog)

501. Evolutionary Genetics.

Spring (4) Staff. Prerequisite: BIOL 220 or equivalent.

The course is designed to consider evolution as a process: Basic population genetic theory; sources of variation; natural selection; isolating mechanisms and speciation. Three lecture hours, one recitation hour.

502. Microbiology.

Fall (4) Forsyth. Prerequisite: BIOL 220 or equivalent.

Homologies are stressed in the study of life using the elementary systems of selected bacteria and other microorganisms. With the ultimate goal of an understanding of current research, the areas covered include classical and modern techniques, biochemistry, sexual and asexual genetics. Two class hours, eight laboratory hours.

504. Topics in Biology.

Fall and Spring (1-4) Staff. This course may be repeated for credit.

Areas of special current research interest presented by resident and visiting faculty members as opportunity and demand arise. Hours to be arranged.

506. Cell Biology.

Fall and Spring (3) Wawersik, Shakes.

An introduction to the principles by which eukaryotic cells function with an emphasis on the molecular biology of cells and experimental approaches to their analysis. Three class hours.

507. Cell Biology Laboratory.

Fall (1) Shakes. Prerequisite or corequisite: BIOL 506.

An introduction to the use of light and electron microscopy, histological procedures and biochemical techniques, including electrophoresis, centrifugation, respirometry and isotopes. Three laboratory hours.

509. Virology.

Fall (3) Williamson. Prerequisites: BIOL220, 221, 225, 226, and 310.

This course gives an overview of fundamental concepts in virology. Topics include the discovery of viruses, principles of virus structure, viral morphogenesis, virus detection methods, viral vaccines, and ecological significance of viruses. A strong emphasis is placed on molecular mechanisms of viral replication. Three class hours.

510. Animal Behavior.

Fall (3) Cristol. Prerequisite: BIOL 302. PSYC 201 or equivalent recommended.

The study of vertebrate and invertebrate behaviors as adapted traits under the influence of both genes and the environment. Animal behavior, including that of humans and endangered species, will be placed in an ecological and evolutionary context. Three class hours.

511. Animal Behavior Laboratory.

Spring (1) Cristol. Prerequisites or corequisites: BIOL 510 and any course in statistics. Offered in alternate years.

This lab is not required for students taking BIOL 510. Course designed to give students experience in designing and undertaking publication-quality research to solve real questions about animal behavior. Three laboratory hours, out-of-class data acquisition necessary.

512. Vascular Plant Systematics.

Fall (4) Case. Prerequisite: BIOL 304 or equivalent.

A study of the principles and research methods of vascular plant systematics, emphasizing classification, evolution, and comparative morphology of the major families of vascular plants. Three class hours, four laboratory hours.

514. Biochemistry.

Spring (3) Staff. Prerequisites: CHEM 305 or CHEM 308 or consent of instructor.

A study of the molecular basis of living processes. The chemistry of the important constituents of living matter; energy metabolism; enzyme kinetics; thermodynamics; biosynthesis; metabolic control. Three class hours.

515. General Endocrinology.

Spring (3) Bradley. Prerequisites: BIOL 302, CHEM 307.

The role of hormones in homeostasis, control of metabolic processes, and reproduction. This is an introductory course and is a prerequisite for Experimental Endocrinology. Three class hours.

516. Ornithology.

Fall (4) Cristol. Prerequisite: BIOL 302. BIOL 510 and BIOL 413 recommended. Offered in alternate years.

Lectures, laboratory exercises, field experiments and birding trips will provide a comprehensive introduction to the ecology and evolution of birds. Phylogenetic relationships, behavior, conservation and identification of Virginia's avian fauna will be stressed. Three class hours, three laboratory hours, and several early morning field trips.

517. Population and Community Ecology.

Fall (4) Staff. Prerequisites: BIOL 302 or equivalents.

Discussion of the structure and dynamics of ecological populations and biotic communities. Emphasis will be on environmental constraints and species interactions that control population growth and determine both diversity and similarities in community structure and function. Three class hours, three laboratory hours.

518. Functional Ecology.

Spring (3) Sanderson. Prerequisite: BIOL 302. Offered in alternate years.

Concepts and approaches in physiological ecology, biomechanics, and ecological morphology. The course emphasizes critical thinking, discussion, and student presentations on journal articles from the primary literature. Hypothesis formulation and methods of data collection and analysis will be studied. Three class hours.

519. Plant Development and Physiology.

Spring (4) Engstrom. Prerequisites: BIOL 304. Offered in alternate years.

An investigation of major topics in plant biology, emphasizing hormone signaling and post-embryonic development, and the use of genetic, molecular genetic, histological, biochemical and molecular systematics approaches to elucidate major outstanding questions. The accompanying lab introduces students to model plant systems and a range of molecular genetic, histological and systematics techniques.

520. Genetic Analysis.

Fall (3) Kerscher. Prerequisites: BIOL 220, 225 or equivalents.

Discussion of classical and modern genetics. Topics will be drawn from the following: Mendelian inheritance, recombination and linkage, cytogenetics, model genetic systems, mutation analysis, mitochondrial and chloroplast genetics. Three class hours.

521. Genetic Analysis Laboratory.

Spring (1) Staff. Prerequisite or corequisite: BIOL 420/520.

Designed to illustrate genetic principles through experimental work with living organisms, including Drosophila, flowering plants and fungi. Three laboratory hours.

522. Phycology.

Fall (4) Staff. Prerequisite: BIOL 304.

A study of eukaryotic algae emphasizing the local marine flora. Systematics, morphology, life histories, development, ecology and economic importance will be presented. The laboratory will offer opportunities for collection and identification of macrophytic marine forms and phytoplankton. Three class hours, three laboratory hours.

526. Aquatic Ecology.

Fall (4) Capelli. Prerequisites: BIOL 220.

Introduction to the ecology of natural water; discussion of the important physical and chemical characteristics of aquatic environments and the adaptations of organisms living in water; community structure and the important processes affecting it, including major aspects of water pollution. Emphasis is on freshwater communities but various aspects of marine ecology are discussed also. Three class hours, three laboratory hours.

528. General Entomology.

Fall (4) Fashing. Prerequisites: BIOL 220 and 225.

An introduction to the biology of insects designed to give the student an overview of entomology. Included are such topics as classification, morphology, physiology, behavior, ecology, and economic importance. Three class hours, four laboratory hours.

531. Physiological Ecology of Plants.

Spring (3) Staff. Prerequisite: BIOL 304. Offered in alternate years.

Consideration of the effects of environment on the growth, physiology, and distribution of plants. The factors which determine the adaptability of plants to various habitats will be discussed. Three class hours.

532. Principles of Animal Physiology.

Fall and Spring (4,4) Bradley, Heideman. Prerequisites: BIOL 302, CHEM 307.

The function of the animal as a whole as indicated by the physiology and interrelationships of different organs and organ systems. The emphasis is on vertebrates, with comparative examples from selected invertebrates. Three class hours, four laboratory hours.

533. Developmental Biology.

Fall (3) Saha. Prerequisite: BIOL 302.

An introduction to embryonic and postembryonic developmental processes in animals emphasizing cellular differentiation, the generation of form and shape, growth regulation, cellular recognition and communication, molecular control mechanisms of gene expression, developmental neurobiology, and cancer. Three class hours.

534. Developmental Biology Laboratory.

Fall (1) Staff Prerequisite or corequisite: BIOL 433/533.

An intensive examination of molecular techniques as applied to developmental processes; this semester ong laboratory will involve cloning and analyzing a developmentally significant gene. Four laboratory hours.

536. Advanced Cell Biology.

Fall (3) Shakes. Prerequisite: BIOL 406/506.

An in-depth study of a specific topic in cell biology based on readings from the current primary literature. Topics will vary but may include the cytoskeleton or cell signaling. Three class hours.

538. Immunology Laboratory.

Spring (1) Zwollo. Prerequisite or corequisite: BIOL 537.

An introduction to current techniques available to study immune responses in mice. Includes tissue culture of lymphocytes, measuring antibody levels using ELISA techniques, and detection of proteins expressed during lymphocyte development using Western blot analyses.

542. Molecular Genetics.

Fall (3) Allison. Prerequisites: BIOL 220, 225, 310 or permission of instructor.

This course gives a comprehensive introduction to molecular genetics emphasizing genome organization, DNA replication and repair, synthesis of RNA and proteins, regulation of prokaryotic and eukaryotic gene expression, epigenetics, RNA processing, molecular genetics of cancer, DNA biotechnology and human gene therapy. Three class hours.

543. Molecular Genetics Laboratory.

Fall (1) Allison. Prerequisite or corequisite: BIOL 542.

Experiments illustrating current techniques in molecular genetics, including basic cloning, transformation of bacteria with recombinant DNA, plasmid and genomic DNA purification, gel electrophoresis, restriction digests, DNA labeling, Southern transfer, PCR and green fluorescent protein expression in transfected mammalian cells. Three laboratory hours.

546. Nuclear Structure and Gene Activity.

Spring (3) Allison. Prerequisite: BIOL 442, or permission of instructor.

An in-depth advanced exploration of the structure of the nucleus and molecular mechanisms of eukaryotic gene regulation, based on readings from the current primary literature. Topics will include mechanisms regulating nuclear import and export of transcription factors and RNA, the role nuclear architecture plays in gene activity and RNA processing, and how failure to appropriately coordinate these processes leads to abnormal or diseased states. Three class hours.

601. Introduction to Graduate Studies.

Fall (3) Staff. This course is required of all biology graduate students.

This is a graduate only course designed to expose new students to a range of techniques and skills that will facilitate their involvement in independent research and graduate studies in biology. Students will receive training in critically reviewing the primary literature, developing research questions, research design and data analysis, oral and written presentations, and the responsible and ethical conduct of research, including discussions of fabrication, falsification, and plagiarism. Students will author both a grant and preliminary research proposal.

610. Topics in Animal Behavior.

Spring (3) Cristol. Prerequisite: BIOL 302. PSYC 201 recommended.

The study of vertebrate and invertebrate behaviors as adapted traits under the influence of both genes and the environment. Students must also attend, complete assignments, and take exams for BIOL 510 but are not permitted to register for both classes. Course requires a comprehensive research paper based on library research. Three class hours, one discussion hour.

627. Wetland Ecosystems.

Fall (4) Chambers and Perry.

An investigation of the structure and function of wetland ecosystems, considering their formation and distribution at local, regional and continental scales. Interactions amongst biologic, geologic and hydrologic components in wetland development will be presented in lecture, lab and field exercises. Three class hours, three laboratory hours.

636. Topics in Advanced Cell Biology.

Spring (3) Shakes. Corequisite: BIOL 536.

Current literature in cell biology will be critically reviewed by class members, with students rotating as discussion leaders. Students must also attend and take exams in BIOL 536 but are not permitted to register for both classes. Four class hours.

637. Topics in Immunology.

Fall (3) Zwollo.

Discussions of research articles on topics related to the structure and function of the immune system. Students must also attend, complete assignments, and take exams for BIOL 437 (Immunology) but are not permitted to register for both classes. Four class hours.

639. Gene Regulation.

Spring (3) Zwollo. Prerequisites: either BIOL 442 or BIOL 437 or permission of instructor.

This course will give students experience in reading and critically analyzing articles from the primary literature. Topics will vary but will involve current research approaches in the field of gene regulation during development of the immune system. Can be taken independently of BIOL 437. Three class hours, one discussion hour.

646. Nuclear Structure and Gene Activity.

Fall (3) Allison. Prerequisite: BIOL 442 or permission of instructor.

Current literature on the structure of the nucleus and molecular mechanisms of eukaryotic gene regulation will be critically reviewed by class members, with students rotating as discussion leaders. Students must also attend, complete assignments, and take exams for BIOL 546 but are not permitted to register for both classes. Four class hours.

647. Neurophysiology.

Spring (4) Griffin. Prerequisites: BIOL 225, BIOL 302, or permission of instructor.

An exploration into the basic concepts related to the activity of the nervous system. The course will focus on electrical and chemical signaling within the nervous system and the ability to control and regulate other physiological systems. Three class hours, three laboratory hours, one discussion hour.

648. Evolutionary Biology.

Spring (3) Swaddle. Prerequisite: BIOL 220 or BIOL 302.

An introduction to the mechanisms and outcomes of evolution. Examples are drawn from many disciplines (e.g. genetics, behavior, and paleontology) to discuss how researchers study the evolution of organisms and develop evolutionary theory. Emphasis will be given to organismal processes. Three class hours.

649. Sexual Selection.

Spring (3) Swaddle. Prerequisites: BIOL 220 or BIOL 302. Offered in alternate years.

An advanced seminar course using the study of sexual selection as a framework to critically examine the primary literature in organismal evolutionary biology and behavioral ecology. Emphasis is placed on student participation in evaluative discussions of published studies and the development of novel ideas for hypothesis testing.

650. Microbial Pathogenesis.

Fall (3) Forsyth. Prerequisites: BIOL 440, or permission of instructor. Offered in alternate years.

Class covers genetic, immunologic and evolutionary aspects of microbial virulence based on readings from the primary literature. Major bacterial and viral disease mechanisms will be examined.

651. Topics in Entomology.

Fall (4) Fashing. Corequisite: BIOL 528.

Depending on the number of students enrolled, current literature in selected fields of entomology will be critically reviewed by class members, or a research project will be assigned. For the literature review option, students will rotate as discussion leaders. Students must also attend lectures and take exams in BIOL 528 but are not permitted to register for both courses. Four class hours, four laboratory hours.

654. Biogeography.

Spring (3) Staff. Offered in alternate years.

Consideration of modern theories relating to the world-wide and local distribution of animals (especially vertebrates) and plants, both as species and as components of faunas, floras, and biotic communities. Three class hours.

659. Topics in Evolutionary Genetics.

Spring (4) Staff. Prerequisites: BIOL 220 or equivalent.

Students must attend lectures, complete assignments, and take exams in BIOL 501, and will critically review current literature in population genetics and evolution. In extra meetings, students will rotate weekly as discussion leaders. Students are not permitted to register for both courses. Four class hours, one recitation hour.

660. Topics in Functional Ecology.

Spring (3) Sanderson. Offered in alternate years.

Current literature in functional ecology will be critically reviewed by class members, with students rotating as discussion leaders. Students must also attend and take exams in BIOL 518 but are not permitted to register for both classes. Four class hours.

662. Concepts of Community Ecology.

Spring (3) Staff. Offered in alternate years.

Consideration of historical and modern concepts of the structure, function, development, and dynamic nature of natural communities and ecosystems, stressing examination of the original scientific literature on dominance and diversity, energy flow and mineral cycling, competitive interactions, ecological succession, and related topics. Three class hours.

664. Topics in Plant Conservation.

Spring (2) Case. Prerequisites: BIOL 304, BIOL 417 (Population and Community Ecology).

This is primarily a discussion-based course that introduces key theoretical concepts in the discipline of plant conservation, and examines the current literature focusing on the conservation of population, species, and communities. Students will present papers in the discussion sessions. Two class hours.

665. Topics in Endocrinology.

Spring (4) Bradley.

Current literature in endocrinology critically reviewed by class members. Students will present papers and lead discussions. Students must also attend lectures and laboratories in BIOL 515 but are not permitted to register for both courses. Four class hours, four laboratory hours.

667. Mechanisms of Bacterial Symbiosis.

Fall (3) Forsyth. Prerequisites: BIOL 440, or permission of instructor.

This course explores the molecular basis for bacterial diseases as well as the basis of bacterial host mutualistic relationships. Classic disease causing organisms and their mechanisms for host insult will be compared and contrasted with interactions with beneficial results for both participants. Three class hours.

668. Experimental Endocrinology.

Spring (varies) Bradley.

Detailed study of selected areas of endocrinology. Two class hours, laboratory hours to be arranged.

673. Topics in Developmental Biology.

Spring (3) Saha.

This course explores current topics in Developmental Biology through a critical analysis of the papers from the primary literature. Students must also attend lectures in BIOL 533 but are not permitted to register for both courses. Four class hours.

676. The Autonomic Nervous Systems.

Fall (3) Griffin. Prerequisites: BIOL 445 or BIOL 447, or permission of instructor.

An in-depth look at the division of the central nervous system responsible for much of the basic regulation and drive responsible for survival. This course will focus on the functional anatomy and physiologic responses involved in this control. Three lecture hours, one discussion hour.

680. Advanced Topics in Biology.

Fall and Spring (1-4,1-4) Staff. This course may be repeated for credit.

Areas of special current research interest presented by resident and visiting faculty members as opportunity and demand arise. (Hours to be arranged.)

682. Graduate Colloquium.

Fall and Spring (1,1) Staff. This course may be repeated for credit up to a maximum of 4 credits.

Presentations on and discussions of selected biological topics by graduate students. One class hour.

690. Problems in Biology.

Fall and Spring (3,3) Staff. Consent of Departmental Graduate Committee.

695. Graduate Research

Fall and Spring (1-12) Staff. Graded Pass/Fail. This course may be repeated for credit.

An intensive program of independent research, conducted in consultation with a MS thesis advisor and committee. Students must consult with their thesis committee at least once per semester.

700. Thesis.

Fall and Spring (1-12) Staff. This course may be repeated for credit. Graded Pass/Fail.

CHEMISTRY DEPARTMENT

The Chemistry Department offers graduate study and research leading to a Masters degree. The department consists of sixteen faculty with research interests in all the major subdisciplines of chemistry. The intimate scale of the Masters degree programs in chemistry creates professionally advantageous opportunities for students with a wide variety of backgrounds and career objectives. Faculty work closely with students to tailor the program to their individual needs.

Students are provided with full tuition waivers as well as teaching and/or research assistantships. The program usually takes no more than 24 months and enables students to fortify their academic background in chemistry while conducting publishable research in close collaboration with faculty. The department maintains a wide range of instrumentation used by students in their research. Classes are typically very small and can be taken in all major subdisciplines of chemistry, as well as related fields of science. Most graduate students have opportunities to mentor undergraduates and present their results at local and national meetings.

Some students earning a Masters degree in chemistry will go directly to industrial positions with a strong career trajectory or continue their education in quality Ph.D. programs. Recent graduates are attending Northwestern University, Purdue University, the University of California at San Diego and the University of Texas at Austin. Other students use the program as a stepping-stone to professional degree programs in education, law and medicine.

Faculty

CHAIR **Christopher J. Abelt** Professor (Ph.D., California, Los Angeles).

GRADUATE DIRECTOR **Deborah C. Bebout** Professor (Ph.D., Cornell).

PROFESSORS **Gary C. DeFotis** (Ph.D., Chicago), **Robert J. Hinkle** (Ph.D., Utah), **Lisa M. Landino** (Ph.D., Virginia), **Robert D. Pike** (Ph.D., Brown), **John C. Poutsma** (Ph.D., Purdue), and **David W. Thompson** (Ph.D., Northwestern).

ASSOCIATE PROFESSORS **Carey K. Bagdassarian** (Ph.D., California, Los Angeles), **Randolph A. Coleman** (Ph.D., Purdue), **Elizabeth J. Harbron** (Ph.D., North Carolina-Chapel Hill), and **Gary W. Rice** (Ph.D., Iowa State).

ASSISTANT PROFESSORS **Jonathan R. Scheerer** (Ph.D., Harvard), **Kristin L. Wustholz** (Ph.D, Washington), and **Douglas D. Young** (Ph.D., North Carolina State).

PROFESSORS EMERITI **Cirila Djordjevic** (Ph.D., University College), **Richard L. Kiefer** (Ph.D., California-Berkeley), **Stephen K. Knudson** (Ph.D., Massachusetts Institute of Technology), **David E. Kranbuehl** (Ph.D., Wisconsin), **Robert A. Orwoll** (Ph.D., Stanford), and **William H. Starnes, Jr.** (Ph.D., Georgia Institute of Technology).

General

The graduate degree programs in Chemistry are designed to flexibly prepare students for their choice of doctoral programs, careers in industry, or medical and other professional degree programs. Graduate students actively participate in the Analytical, Biochemical, Inorganic, Organic, Physical or Polymer research programs of the faculty, producing high-quality, publishable results. In consultation with their research supervisor, students select courses complementing their research and professional interests from chemistry or related fields, especially biology, applied science, and marine science. Thesis-based degree programs include an accelerated joint B.S./M.S. degree in Chemistry, a traditional M.S. in Chemistry, and an M.S. in Environmental Chemistry offered in cooperation with the School of Marine Science. Programs leading to a joint M.S. in Chemistry/Ph.D. in Applied Science or a M.A. in Chemistry do not require a Thesis. An industrial internship is possible for the three M.S. in Chemistry programs.

Additional information about the department can be found on the web at http://www.wm.edu/as/chemistry.

Admission

All applicants must submit scores for the aptitude portions of the Graduate Record Exam. The subject portion (Chemistry) is recommended but not required. Admission to the M.S. in Chemistry/Ph.D. in Applied Science program will be made by a joint departmental committee.

Matriculating undergraduates interested in the B.S./M.S. program should contact the Chemistry Department when they arrive for advising. Chemistry concentrators may apply for formal admission to the joint program in the second semester of their sophomore year. Applicants must have completed the first two years of chemistry as well as the physics and math prerequisites before their 3rd year, and they must possess an overall GPA average of 3.0 and a 3.0 in chemistry courses.

Degree Requirements for the Master of Science

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)

A candidate for the degree of Master of Science in Chemistry:

- shall make a selection of graduate courses under the guidance of a departmental advisor; undergraduate courses may have to be taken or repeated in those areas where adequate preparation appears to be lacking;
- must attend the Graduate Seminar during each semester in residence until Research Graduate status is established, and must give two oral presentations as part of his or her Graduate seminar program;
- must acquire at least twelve semester credits (with a minimum of six credits in Chemistry not including 665 or 700) in 600 level courses;
- must prepare a Thesis based upon research carried out under the guidance of a staff member;
- must pass a comprehensive oral examination based upon the entire work done for graduate credit and after approval of the thesis by an examining committee.

Degree Requirements for the Master of Science/Joint B.S. Program

(In addition to the general College requirements)

Students must maintain an overall GPA average of 3.0 and a 3.0 in chemistry courses through their 3rd year. All non-chemistry courses required for the B.S. degree must be completed before the 4th year. During the fall semester of the 4th year, students may take no more than one undergraduate chemistry lecture course and an associated lab course to complete their B.S. degree. All B.S. degree requirements must be completed before the second semester of the student's 4th year. Students must begin the research leading to their Master's Thesis the summer following their 3rd year. They are required to continue full time research the summer following their 4th year. They will complete the graduate coursework during their 4th year and be enrolled in graduate research. The remaining requirements are the same as for the Degree of Master of Science.

Degree Requirements for the Master of Science/Joint Ph.D. Program in Applied Science

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)

A candidate for the degree of Master of Science in Chemistry in the joint Ph.D. program with Applied Science must satisfy the course requirements specified by the Applied Science Ph.D. program. The comprehensive exam for the Applied Science Ph.D. will satisfy the comprehensive exam for the M.S. degree. A typical schedule of courses is shown below. No thesis is required.

Year 1, Summer

Chemistry research (CHEM 695, variable credit)

Year 1, Fall

Applied Solid State Science (APSC 621, 4 credits)
An applied chemistry course, usually Polymer Science I (CHEM 511, 3 credits)
An elective chemistry course (3 credits)
Chemistry research (CHEM 695, variable credit)
Chemistry seminar (CHEM 665, 1 credit)

Year 1, Spring

Quantitative Materials Characterization (APSC 622, 4 credits)
An applied chemistry course, usually Polymer Science II (CHEM 512, 3 credits)
An elective chemistry course (3 credits)
Chemistry research (CHEM 695, variable credit)
Chemistry seminar (CHEM 665, 1 credit)

Year 2, Summer

Chemistry research (CHEM 695, variable credit)

Year 2, Fall

Mathematical and Computational Methods I (APSC 607, 4 credits)
Introduction to Scientific Research I (APSC 603, 2 credits)
Chemistry research (CHEM 695, variable credit)
Chemistry seminar (CHEM 665, 1 credit)

Degree Requirements for the Master of Science in Environmental Chemistry

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)

A candidate for the degree of Master of Science in Environmental Chemistry shall make a selection of graduate courses under the guidance of the chemistry graduate director and must complete the following Chemistry and Marine Science courses:

- CHEM 309 (Instrumental Analysis)
- CHEM 504 (Advanced Analytical Chemistry)
- CHEM 665 (Graduate Seminar)
- MSCI 563 (Environmental Chemistry)

Of the remaining required credits, at least two courses must be in Chemistry.

Degree Requirements for the Master of Arts

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)

A candidate for the degree of Master of Arts in Chemistry must satisfy all of the requirements for the M.S. degree except for the Thesis. In addition the candidate must acquire 8 additional credit hours in courses numbered 600 and above.

Description of Courses

Unless otherwise noted, all courses are graded using standard grading [A, B, C, D, F] scheme (See VI. Grading and Academic Progress in the section entitled 'Graduate Regulations' in this catalog) and may not be repeated for credit (See Repeated Courses requirements in the section entitled 'Graduate Regulations' in this catalog).

501. Advanced Physical Chemistry.

Fall (3) DeFotis.

Quantum chemistry and molecular spectroscopy.

502. Advanced Inorganic Chemistry.

Spring (3) Pike.

Principles and applications of symmetry to structure, bonding, and spectroscopy.

503. Advanced Organic Chemistry.

Fall (3) Abelt.

A structure-reactivity approach to reaction mechanism and synthesis.

504. Advanced Analytical Chemistry.

Spring (3) Rice.

Advanced topics in analytical chemistry.

508. Computational Chemistry.

Spring (3) Poutsma. (Not offered in 2012)

Principles and applications of computational methods for the determination of molecular structure and energy.

511. Polymer Science I.

Fall (3) Staff. (Not offered in 2012)

An introduction to the chemical aspects of polymer science at the molecular level. Topics include the preparation, modification, degradation, and stabilization of polymers. Reaction mechanisms are stressed.

512. Polymer Science II.

Spring (3) Kranbuehl.

A study of the relationships of chemical and physical properties of synthetic and biological polymers to their molecular structure.

514. Biochemistry.

Spring (3) Landino.

A study of the molecular basis of living processes, the chemistry of important constituents of living matter, biosynthesis, metabolism, bioenergetics, enzyme kinetics, metabolic control, transport mechanisms.

515. Advanced Biochemistry.

Fall (3) Bebout.

A continuation of the study of biological processes on a molecular level begun in CHEM 514. Membrane biochemistry, molecular immunology, protein structure and function, biochemical applications of genetic engineering, and other topics of current interest.

516. Polymer Laboratory.

Spring (1) Staff.

652. Topics in Physical Chemistry.

Spring (3) Staff.

653. Topics in Nuclear Chemistry.

Fall (3) Staff.

654. Topics in Inorganic Chemistry.

Spring (3) Staff.

655. Topics in Analytical Chemistry.

Fall (3) Staff.

656. Topics in Organic Chemistry.

Fall (3) Staff.

657. Organic Synthesis.

Spring (3) Scheerer.

An advanced treatment of organic synthetic methods which includes examples of natural products preparations.

658. Organic Spectroscopy.

Fall (3) Harbron.

Theory and application of spectroscopic methods to the analysis of organic compounds. Topics include absorption, fluorescence, infrared, and proton and carbon nuclear magnetic resonance spectroscopies with an emphasis on structure elucidation and other practical applications.

664. Topics in Biochemistry.

Fall (3) Staff.

665. Graduate Seminar.

Fall and Spring (1,1) Staff. This course may be repeated for credit. Graded Pass/Fail.

Each full-time graduate student is required to enroll in this course each semester until classified as a Research Graduate. This course includes training in the responsible and ethical conduct of research, as well as discussions of fabrication, falsification, and plagiarism.

695. Research.

Fall and Spring (hours to be arranged) Staff. Graded Pass/Fail.

A maximum of seven credits may be applied toward the M.A. or M.S. degree course requirements.

696. Summer Graduate Research.

Summer (0) Graded Pass/Fail. This course may be repeated. Prerequisite: permission of instructor.

700. Thesis.

Fall and Spring (hours and credits to be arranged) Staff. Graded Pass/Fail. This course may be repeated for credit.

COMPUTER SCIENCE DEPARTMENT

The Computer Science Department at William and Mary offers a stimulating, collegial environment in which to pursue a Master's or Ph.D. degree. With coursework in several broad areas of computer science, William and Mary provides a wide spectrum of advanced study and research opportunities. Defining qualities include the opportunity for easy interaction with faculty, and equal dedication to research and teaching – a tradition rooted in the university's history as the nation's second-oldest institution of higher learning. Graduate students benefit from the proximity of NASA Langley Research Center, and the Thomas Jefferson National Accelerator Facility (TJNAF), institutions which offer opportunities for collaborative research.

Established in 1986, the graduate program features an excellent placement record for its graduates. Our master's students have found employment primarily with major computer system manufacturers, software development companies, and within the aerospace and defense industry. Our Ph.D. students have gone on to tenure-track academic positions, or have accepted industrial research and development positions. The department's current graduate enrollment is about eighty students. Historically, one-third of the graduate students have been women.

The Master's (M.S.) program is appropriate for students who would like to improve their professional competence or prepare for future doctoral study. The program can normally be completed in two years or less without prior graduate-level coursework. The department also offers, in conjunction with the Mathematics Department, a specialized MS degree in Computational Operations Research (COR). COR students conduct research in modeling real world systems using a variety of mathematical and computational techniques. Sample applications include airline crew scheduling, actuator placement in flexible space structures, allocation of spare parts, job shop scheduling and performance analysis.

Students from either MS program can continue for the Ph.D. in Computer Science. The Ph.D. program prepares students for careers in research or academia. The program can generally be completed in five years or less of graduate study and requires a dissertation based on original research that makes a significant contribution to scholarly knowledge in the student's research area.

Areas of Research and Study

- Systems and Experimental Research examines the design and analysis of computer systems, systems software, distributed systems, parallel systems, architecture, and networks.
- Modeling and Simulation uses computational models to answer qualitative and quantitative questions about real physical systems.
- Algorithms addresses the design and implementation of computational methods, algorithmic complexity and combinatorial optimization problems.

Faculty

CHAIR **Virginia Torczon** Professor (Ph.D., Rice).
GRADUATE DIRECTOR **Evgenia Smirni** Professor (Ph.D., Vanderbilt).
PROFESSORS **Robert E. Noonan** (Ph.D., Purdue), and **Andreas Stathopoulos** (Ph.D., Vanderbilt).
ASSOCIATE PROFESSORS **Phil Kearns** (Ph.D., Virginia), **Peter Kemper** (Ph.D., Dortmund), **Qun Li** (Ph.D., Dartmouth), **Weizhen Mao** (Ph.D., Princeton), and **Haining Wang** (Wilson P. and Martha Claiborne Stephens Term Distinguished Associate Professor of Computer Science) (Ph.D., Michigan).
ASSISTANT PROFESSORS **Isil Dillig** (Ph.D., Stanford), **Thomas Dillig** (Ph.D., Stanford), **Pieter Peers** (Ph.D., K.U. Leuven), **Denys Poshyvanyk** (Ph.D., Wayne State), **Xipeng Shen** (Ph.D., Rochester), and **Gang Zhou** (Ph.D., Virginia).
RESEARCH ASSISTANT PROFESSOR **Saskia Mordijck** (Ph.D., University of California, San Diego).
VISITING ASSOCIATE PROFESSOR **Rance Necaise** (Ph.D., William and Mary).
INSTRUCTOR **Deborah S. Noonan** (M.S., William and Mary).
PROFESSORS EMERITI **William L. Bynum** (Ph.D., North Carolina), **Stefan Feyock** (Ph.D., Wisconsin), **Richard H. Prosl** (Ph.D., Rensselaer), and **Paul K. Stockmeyer** (Ph.D., Michigan).
ADJUNCT PROFESSORS **Rex K. Kincaid** (Ph.D., Purdue), and **Lawrence M. Leemis** (Ph.D., Purdue).
ADJUNCT ASSOCIATE PROFESSOR **R. Michael Lewis** (Ph.D., Rice).

General Description

The Department offers a Master of Science (M.S.) in computer science and a Doctor of Philosophy (Ph.D.) in computer science. In conjunction with faculty from the Mathematics Department, the department also offers a M.S. with a specialization in computational operations research. As part of the Computational Science Cluster, the department offers a M.S. and a Ph.D. with a specialization in computational science. Well qualified students who earn a M.S. with a specialization in computational operations research are encouraged to apply for admission to the Ph.D. program. Faculty are actively engaged in research in the following areas:

- Operating systems: networks, architecture, parallel and distributed computation, security, compiler construction, software engineering;
- Modeling and Simulation: discrete-event simulation, stochastic systems;
- Computational Science: serial and parallel numerical methods, numerical optimization;
- Foundations: analysis of algorithms, graph theory, cryptography;
- Operations Research: nonlinear programming, discrete optimization, metaheuristics, reliability, computational statistics, stochastic optimization.

Some faculty and graduate students participate in joint research activities with two nearby national research facilities: the NASA Langley Research Center and the Thomas Jefferson National Accelerator Facility (Jefferson Lab).

The department maintains several heterogeneous networks to support teaching and research. These networks include personal computers, Unix workstations, and multiprocessors. Additional information about the department can be found on the web at http://www.wm.edu/computerscience.

Admission

Applicants must submit test results for the aptitude portion of the Graduate Record

Examination and are encouraged (but not required) to submit results from a suitable subject area. Students from non-English speaking countries must submit TOEFL results.

Admission requirements for the M.S. and Ph.D. in computer science

Students seeking the M.S. or Ph.D. degrees in computer science are expected to have a background that includes the following:

Mathematics: two calculus courses and one linear algebra course.
Computer Science: two introductory programming courses (CS1 and CS2 in the standard computer science curriculum) and one course in each of discrete mathematics, data structures, algorithms, and computer organization.

Applicants lacking this background may be admitted provisionally into the M.S. program. In that case, the department will establish a suitable set of qualifying courses at the time of admission. To achieve regular status, provisionally accepted students must earn at least a B in each qualifying course. There is no provisional admission into the Ph.D. program.

Admission requirements for the M.S. with a specialization in computational operations research

Students seeking the M.S. degree with a specialization in computational operations research are expected to have a background in mathematics, science or engineering and the ability to program in a high-level language. Students with insufficient background in computer science may be required to enroll in CSCI 241 and CSCI 303. Applicants lacking an appropriate background may be admitted provisionally.

Admission requirements for the M.S. with a specialization in computational science

Students seeking the M.S. degree with a specialization in computational science are expected to have a background in mathematics, science or engineering that includes the following:

Mathematics: two calculus courses and one linear algebra course
Computer Science: two introductory programming courses (CS1 and CS2 in the standard computer science curriculum).

Students with insufficient background in data structures, algorithms, computer organization, and systems programming may be required to enroll in CSCI 241, CSCI 303, CSCI 304, and CSCI 315.

Degree Requirements for the Master of Science

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)
Students who have taken twelve or more credits in courses leading to a graduate degree must maintain a minimum grade point average of 3.0. Students with less than a 3.0 average may appeal in writing to the department's Committee on Admission, Retention, and Financial Aid to remain in the graduate program. The committee normally rejects appeals from students with less than a 2.75 grade point average.

Students may choose to write a thesis or not. Students who do not choose the thesis option must complete 32 graduate credits, including CSCI 710, Research Project. Students who choose the thesis option must complete 24 graduate credits in addition to CSCI 700, M.S. Thesis, and defend their thesis at an oral examination, open to the faculty and to whomever else the department may invite. CSCI 710, Research Project cannot be applied to the 24 credits. In either case, students can apply at most 12 credits in courses

numbered below 600 and must satisfactorily complete CSCI 653 and two of the following seven courses: CSCI 626, CSCI 634, CSCI 635, CSCI 649, CSCI 652, CSCI 663, CSCI 664.

A student cannot use courses taken in another department, nor CSCI courses designated as Computational Operations Research courses (last digit in the course number is an 8), to satisfy degree requirements without prior written approval of the student's advisor and the Graduate Admissions Committee.

Students must submit a 2-year plan of study at the beginning of their first semester in the M.S. program, which must be endorsed by their faculty advisors and then approved by the Graduate Admission Committee.

Degree Requirements for the Master of Science with a Specialization in Computational Operations Research

Students must complete 32 graduate credits, including one of either CSCI 698, Simulation and Modeling Project in Computational Operations Research, CSCI 708, Research Project in Computational Operations Research, or CSCI 710, Research Project. There is no thesis option for this specialization. In addition, students must satisfactorily complete at least seven courses from the following list of courses in the computational operations research area: CSCI 608, 618, 628, 638, 648, 658, 668, 678, 688, 698, and 708. Math 501, Math 524, and/or Math 552 may be taken and will count towards the required 32 graduate credits.

Degree Requirements for the Master of Science with a Specialization in Computational Science

Students have to abide by the minimum grade point requirements and may choose to write a thesis or not, as specified in the requirements for the Master of Science. In either case, students may apply at most 12 credits in courses numbered below 600 and must satisfactorily complete CSCI 653, CSCI 649, and one from the following courses: CSCI 626, CSCI 634, CSCI 635, CSCI 652, CSCI 663, CSCI 664. In addition students must also satisfactorily complete at least one graduate course from outside the Computer Science Department. Each student will have a two-person computational science advisory committee within the department to advise the student about what is needed to meet the certification requirements of the Computational Science Cluster.

Degree Requirements for the Doctor of Philosophy

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)
Students seeking the Ph.D. in computer science must complete an eight course requirement for credit, with at least a 3.7 grade point average in seven of the eight courses, and with no individual grade lower than B-. All eight courses must be taken in the Computer Science Department at William and Mary.

Six courses must be chosen from the following pool:

626 Data Analysis and Simulation
634 Advanced Computer Networking
635 Advanced Software Engineering
649 Computational Methods
652 Advanced Compiler Construction
653 Analysis of Algorithms
663 Theory of Computation
664 Advanced Operating Systems
653 Analysis of Algorithms

663 Theory of Computation
664 Advanced Operating Systems

The remaining two courses must be chosen from 700 level courses, excluding 700 M.S. Thesis, 708 Research Project in Computational Science, 710 Research Project, 770 Colloquium, 790 Readings, and 795 Research.

A student may not use courses taken in another department nor CSCI courses designated as Computational Operations Research courses (last digit in the course number is an 8), to satisfy degree requirements without prior written approval of the student's advisor and the Graduate Admissions Committee.

For the Degree of Doctor of Philosophy with a specialization in computational science, the student must satisfy all of the department's requirements for the degree of Doctor of Philosophy. In support of the specialization in computational science, the student must take the CSCI 649 course, and at least one graduate course from outside the department. If two or more graduate courses outside the department are taken, only one of them can be used to satisfy the department's eight-course requirement. In all cases, the grade point average will be based on the seven courses taken inside the department.

Each computational science student will have a three-person computational science advisory committee within the department to advise the student about what is needed to meet the certification requirements of the Computational Science Cluster. The committee will approve the graduate course(s) from outside the department, and ensure that the dissertation topic incorporates computation in a creative way, either by developing an enabling computational technology, or by using such technologies to obtain a significant scientific result.

Doctoral students must complete a year of continuous residence as a full-time student at William & Mary. Students who obtain a M.S. or M.A. degree must complete their residency requirement after satisfying the requirements for a M.S. or M.A. degree (at William & Mary or elsewhere). Students who do not obtain a M.S. or M.A. degree must complete their residency requirement after satisfying the department's eight course requirement. There is no foreign language requirement.

In addition to required course work, doctoral students will identify a principal research advisor, form a doctoral advisory committee, and petition the department for acceptance into candidacy for the Ph.D. degree. After acceptance into candidacy, students must pass the thesis proposal exam. This examination is oral, is conducted by the candidate's committee, and is open to the faculty and to whomever else the department may invite. Approximately six months before the anticipated dissertation defense, the candidate is required to meet with the committee. At this meeting, the candidate is expected to describe in detail the status of the research upon which the dissertation is based and plan for conducting the work that remains to be done. The purpose of this meeting is to provide the committee with an opportunity to evaluate the candidate's work and plans, and to provide feedback and advice in advance of the defense. The committee may require, at its discretion, additional meetings before a defense date can be scheduled. Candidates must submit and satisfactorily defend a dissertation to a committee of at least five members, with at least one member from outside the department. The dissertation is based on original research and should contribute to the discipline's body of knowledge. The defense is oral and is open to the faculty and to whomever else the department may invite. Each year, the faculty will review how well doctoral students have progressed toward completion of their Ph.D. degree. The department provides written guidelines to help students judge their own progress. In addition, the department provides more specific regulations than those conveyed in this catalog. Students are solely responsible for familiarizing themselves with all guidelines and regulations of the department. In Computer Science and Computer Science with a specialization in Computational Science, students receiving regular

admission to the M.S./Ph.D. program have (7) seven years from the time they enter the graduate program to complete all degree requirements. There is no provisional admission to the Ph.D. programs in Computer Science. In Computer Science with a specialization in Computational Operations Research, students receiving admission to the M.S. program in Computational Operations Research must apply to the Ph.D. program in Computer Science after completing the M.S. degree requirements. Such students would have (7) seven years from the time of this second admission to complete the Ph.D. requirements.

Description of Courses

Wherever a William & Mary course is specified as a prerequisite, it is understood that appropriate experience or an equivalent course, taken at another institution, may be substituted for the specified prerequisite. Each such substitution must be approved by the instructor of the course for which a substitution is appropriate. Generally, graduate students should also consult with their advisors to verify that they meet all course prerequisites.

Note that 500-level courses are cross-listed as 400-level courses or 300-level courses in the undergraduate catalog and will thus be open to undergraduates. In these cross-listed courses, there will be higher expectations and additional requirements for graduate students. Students should consult with the instructor of such a course for further information.

Unless otherwise noted, all courses are graded using standard grading [A, B, C, D, F] scheme (See VI. Grading and Academic Progress in the section entitled 'Graduate Regulations' in this catalog) and may not be repeated for credit (See Repeated Courses requirements in the section entitled 'Graduate Regulations' in this catalog).

503. Algorithms.

Spring (3) Prerequisites: Data Structures, Discrete Structures.

A systematic study of algorithms and their complexity, including searching, sorting, selecting, and algorithms for graphs. A survey of algorithm design methods, including greedy algorithms, divide-and-conquer, dynamic programming, and backtracking. An introduction to NP-complete problems. No credits earned in this course may be applied to the number of credits required for a graduate degree. [Cross-listed with CSCI 303]

504. Computer Organization.

Fall and Spring (3). Prerequisites: CSCI 241 and CSCI 243.

Organization of computer hardware and software; virtual machines, computer systems organization, machine language, assembler language, and microprogramming. No credit earned in this course may be applied to the number of credits required for a graduate degree. [Cross-listed with CSCI 304]

512. Web Programming.

Spring (3) Prerequisite: CSCI 321. May be taken for Audit.

Overview of the Internet. Markup languages: HTML, CSS, XML. Server- side programming languages: Perl/Python, PHP, Java. Other topics include: N-tier programming, security, database access, XML processing.

515. Systems Programming.

Spring (3) Prerequisite: Computer Organization.

The design and implementation of programs which provide robust and efficient services to users of a computer. Macro processors; scripting languages; graphical interfaces; network programming. Unix and X are emphasized. No credits earned in this course

may be applied to the number of credits required for a graduate degree. [Cross-listed with CSCI 315]

520. Elementary Topics.

Fall and Spring (1, 2, or 3 credits, depending on material) Prerequisites: Will be published in the registration schedule. This course may be repeated for credit.

A treatment of elementary topics of interest not routinely covered by existing courses. Material may be chosen from various areas of computer science.

521. Implementation of Database Systems.

Spring (3) Prerequisite: An introductory course in database.

Issues involved in designing efficient database systems, and the strategies, data structures, and algorithms used in the implementation of such systems. Some advanced topics covered: data warehousing, online analytical processing, data mining, spatial data management.

523. Finite Automata and Theory of Computation.

Fall and Spring (3,3) Prerequisites: Linear Algebra, Algorithms.

Theory of sequential machines and finite automata. Turing machines, recursive functions, computability of functions.

524. Computer Architecture.

Spring (3). Prerequisite: Computer Organization.

An introduction to the principles of computer design. Topics include data representation, including adders, signed integer arithmetic, floating point representation and character representation. A study of microprocessor, minicomputer and mainframe architecture including clocks, memory management, bus communication and input/output.

526. Simulation.

Fall (3) Prerequisites: Calculus, Algorithms.

Introduction to simulation. Discrete and continuous stochastic models, random number generation, elementary statistics, simulation of queuing and inventory systems, Monte Carlo simulation, point and interval parameter estimation. Selected applications.

527. Computer Graphics.

Fall (3) Prerequisites: Linear Algebra, Algorithms, Computer Organization.

Introduction to computer graphics and its applications. Topics include coordinate systems, the relationship between continuous objects and discrete displays, fill and flood algorithms, two-dimensional geometric transformations, clipping, zooming, panning, and windowing. Topics from three-dimensional graphics include representations for objects, geometric and projection transformations, geometric modeling, and hidden line/surface removal algorithms.

530. Computer Languages.

Fall and Spring (1 or 2 credits, depending on material). Prerequisites: Will be published in the preregistration schedule.

Topics include syntax, semantics, and pragmatics of one computer language as well as aspects of that language's intended areas of application which influenced its design. The language studied will vary; students may repeat the course for different languages.

534. Network Systems and Design.

Fall (3) Prerequisites: Systems Programming, or permission of instructor.

The Internet; principles and design of network applications, including web servers and multimedia; transport, network and data link layers; network security; network performance evaluation and capacity planning.

535. Software Engineering.

Spring (3) Prerequisites: Programming Languages.

The software life cycle. Software design methodologies. Testing and maintenance. Programming teams.

542. Compiler Construction.

Spring (3) Prerequisites: Algorithms, Computer Organization, Programming Languages.

Principles and tools for the construction of translators for programming languages. Topics include lexical analysis, block structure, grammars, parsing, error recovery, program representation, run-time organization and code generation.

544. Principles of Operating Systems.

Fall (3) Prerequisites: Algorithms, Computer Organization, Systems Programming.

The conceptual view of an operating system as a collection of concurrent processes; semaphores, monitors, and rendezvous. Real and virtual memory organization, resource allocation, file organization and management, processor allocation and management, and external device management.

554. Computer and Network Security.

Spring (3) Prerequisite: CSCI 315.

An introduction to the principles and practices of cryptography, network security, and secure software. Cryptography topics include: basic methods, key distribution and protocols for authenticated and confidential communications. The practice of network security includes: Kerberos, PGP, public key infrastructures, SSL/TLS, IP security, intrusion detection, password management, firewalls, viruses and worms, and Denial of Service (DoS) attacks.

597. Problems in Computer Science.

Fall, Spring and Summer (1). Graded Pass/Fail.

Supervised projects selected to suit the needs of the graduate student, including those wishing to perform an internship as part of the Curricular Practical Training Program. Projects to be chosen in consultation with the student's advisor. Acceptable research outlines and project reports are required. Students may count credits received in only one offering of this course toward the number of credits required for their degree.

608. Decision Theory.

(3) Prerequisite: Equivalent of MATH 351.

Development and use of systematic procedures for assisting decision makers in evaluating alternative choices. Emphasis is on problem formulation, uncertainty and risk assessment, Bayes, minimax and other decision rules and applications. Problems will be solved using appropriate software tools.

616. Stochastic Models in Computer Science.

Fall (3) Prerequisites: Discrete Mathematics, Calculus.

An introduction to stochastic models, problem solving, and expected value analysis

as applied to algorithms and systems in computer science. Topics include probability, discrete and continuous random variables, discrete-time Markov chains, and continuous time birth-death processes.

618. Models and Applications in Operations Research.

(3) Prerequisite: Equivalent of MATH 323.

A study of realistic and diverse Operations Research problems with emphasis upon model formulation, interpretation of results and implementation of solutions. Topics include applications of linear programming, goal programming, decomposition of large-scale problems, and job scheduling algorithms. Problems will be solved using appropriate software tools.

626. Data Analysis and Simulation.

Spring (3) Prerequisites: Some knowledge of probability and statistics.

Basic statistical analysis techniques for experimental data generation and collection, aiming at design, analytic modeling and implementation of systems. Covers basics from the areas of statistics, simulation, event queueing, and their application to Internet systems, data centers and cloud computing, storage systems, distributed systems, and hardware/software design.

628. Linear Programming.

Fall (3). Prerequisite: Equivalent of MATH 211. Co-requisite: equivalent of CSCI 241.

Theory and applications of linear programming. Topics include the simplex method, duality theory, sensitivity analysis and interior point methods. Problems will be solved using appropriate software tools.

634. Advanced Computer Networking.

Fall (3) Prerequisites: Computer Networks, or permission of the instructor.

Covers various aspects of computer networking: Internet design principles, wireless, mobile, and sensor networks, MAC protocols, routing, congestion/flow control, network topology and traffic analysis, network security, web service, and overlay networks.

635. Advanced Software Engineering.

Fall (3) Prerequisites: an undergraduate course in software development.

Covers a range of topics that challenge today's software development teams: the design of large systems, the necessity to adjust and maintain existing software systems over a longer than expected life cycle, the urge for correctness, robustness and performance of software.

638. Nonlinear Programming.

(3) Prerequisites: CSCI 628 and the equivalent of MATH 212.

Topics include unconstrained optimization, nonlinear least-squares, feasible-point methods, and penalty and barrier methods, with an emphasis on effective computational techniques.

648. Network Optimization.

(3) Prerequisite: CSCI 628.

Network flow theory and algorithms, including transportation, maximum flow shortest path and minimum spanning tree problems. Applications to a variety of areas are also stressed. Problems will be solved using appropriate software tools.

649. Computational Methods.

Fall (3) Prerequisites: undergraduate Calculus and Linear Algebra.

Covers a wide spectrum of numerical algorithms and techniques for solving real world computational problems. Topics include non-linear and linear equations, interpolation, integration, differentiation, and the central effects of floating point arithmetic. Both theory and programming aspects are covered.

652. Advanced Compiler Construction.

Spring (3) Prerequisites: Finite Automata, Compiler Construction.

A course on compiler technology with focus on program code optimizations, generation, and parallelization. Topics include data flow analysis, code transformations, dependence theory, parallelization and vectorization, register and cache management, and interprocedural analysis.

653. Analysis of Algorithms.

Spring (3) Prerequisite: Algorithms.

Algorithm design techniques including divide-and-conquer, dynamic programming and greedy method. Analysis methods including worst case and average case. Additional topics chosen from among amortized analysis, lower bound theory and NP-completeness.

654. Advanced Computer Architecture.

Fall or Spring (3) Prerequisite: Computer Architecture.

A study of high performance computer architecture with emphasis on experiments and simulation. Topics include pipelining, memory hierarchies, I/O, multiprocessors, and new designs for performance improvements.

658. Discrete Optimization.

Spring (3) Prerequisites: CSCI 628 and the equivalent of CSCI 303.

Topics include relaxation techniques, constructive heuristics, improving search techniques (simplex method simulated annealing, tabu search), branch and bound schemes, and valid inequalities for branch and cut methods. Problems will be solved using appropriate software tools.

663. Theory of Computation.

Fall (3) Prerequisites: Finite Automata and a strong mathematical background.

An in depth study of Turing machines and the equivalent computational models such as recursive function theory and lambda calculus. Church's thesis and incompleteness results. Computational complexity including NP-completeness.

664. Advanced Operating Systems.

Spring (3) Prerequisite: Operating Systems.

Advanced topics in the design and implementation of modern operating systems, especially those which support a distributed computer environment. Topics include: synchronization, mutual exclusion, language support, process and thread management, scheduling, remote procedure call, fault tolerance, network and parallel file systems, security, modeling and performance.

668. Reliability.

(3) Prerequisites: equivalent of MATH 401 and CSCI 141.

Introduction to probabilistic models and statistical method used in analysis of reliability problems. Topics include models for the lifetime of a system of components and statistical analysis of survival times data. Problems will be solved using appropriate software tools.

670. Colloquium.

Fall and Spring (1,1). Graded Pass/Fail. This course may be repeated for credit.

Each full-time graduate student is required to enroll in this course. No credits earned in this course may be applied to the number of credits required for a degree. This course includes training in the responsible and ethical conduct of research, as well as discussions of fabrication, falsification, and plagiarism.

674. Parallel Computing.

Fall (3) Prerequisites: CSCI 652, CSCI 653, or permission of the instructor.

This course introduces parallel computation as a means of achieving high performance in modern parallel architectures. A unified approach is followed, where the design of parallel algorithms, their implementation and performance evaluation is studied in relation to the underlying system.

678. Statistical Analysis of Simulation Models.

(3) Prerequisites: equivalent of MATH 351, MATH 401 and CSCI 141.

This course introduces statistical techniques used in the analysis of simulation models. The first half of the course develops techniques for determining appropriate inputs to a simulation model, and the last half develops analysis techniques that are applied to the output of a simulation model.

680. Topics.

Fall and Spring (1, 2, or 3 credits, depending on the material covered). Prerequisite: Will be published in the preregistration schedule. This course may be repeated for credit.

A treatment of Master's level topics of interest not routinely covered by existing courses. Material may be chosen from various areas of computer science.

688. Topics in Computational Operations Research.

(3) May be repeated for different topics. This course may be repeated for credit.

A treatment of Master's level topics of interest not routinely covered by existing courses. Material may be chosen from various areas of computational operations research.

690. Readings in Computer Science.

Fall or Spring (1, 2, or 3 credits, depending on the material covered). Graded Pass/Fail. Prerequisite: Permission of the instructor and the Chair. This course may be repeated for credit.

A description of the intended contents of the readings course must be approved by the Chair before the student may register for the course. Students electing to satisfy M.S. requirements by taking 24 credits and writing a thesis may not count credits received in this course toward the required 24. Students electing to satisfy M.S. requirements by taking 32 credits may count credits received in only one offering of this course toward the required 32.

695. Research.

Fall and Spring (Hours and credits to be arranged). Graded Pass/Fail. This course may be repeated for credit.

Required of all full-time students who have not attained Research Graduate status. No credits earned in this course may be applied to the number of credits required for a degree.

698. Simulation and Modeling Project in Computational Operations Research.

Fall (3). Prerequisites: equivalent of MATH 401 and CSCI 241.

Simulation model building in a high-level simulation language (SIMAN) with C++/C interface. Topics include network, discrete-event, and continuous modeling approaches. Interfaces between the three modeling approaches are presented. Familiarity with univariate and multivariate probability distributions is required for input modeling and simulation output analysis. Course culminates in a semester project in SIMAN.

700. M.S. Thesis.

Fall and Spring (Hours and credits to be arranged). This course may be repeated for credit.

708. Research Project in Computational Operations Research.

Fall and Spring (2,2). Graded Pass/Fail. Prerequisite: Permission of Graduate Director.

Students will select a faculty advisor and committee in their area of specialization within computational operations research, prepare a research proposal abstract for approval by the department's director of graduate studies, undertake a research project, and write a paper describing their research. This course is normally taken after a student has completed 18 credit hours toward the M.S. degree with a specialization in computational operation research. Not open to students who receive credit for either CSCI 700 or CSCI 710.

710. Research Project.

Fall and Spring (2,2). Graded Pass/Fail. Prerequisites: Permission of Graduate Director.

Students will select a faculty advisor and committee in their area of research interest, prepare a research proposal abstract for approval by the department's director of graduate studies, undertake a research project, and write a paper describing their research. This course is normally taken after a student has completed 18 credit hours toward the M.S. degree. Not open to students who receive credit for either CSCI 700 or CSCI 708.

712. Advanced Compiler Construction II.

Spring (3) Prerequisites: CSCI 542, CSCI 652.

A project-oriented course involving compilers or compiler generators. Possible topics include syntactic error recovery, semantic analysis, code optimization and code generation.

723. Advanced Analysis of Algorithms.

Fall (3) Prerequisites: CSCI 653 or consent of the instructor.

Advanced aspects of the design and analysis of computer algorithms. The study of probabilistic algorithms and parallel algorithms for solving problems from graph theory, geometry, and number theory. Lower bound theory. Intractability theory and its application to modern cryptography.

726. Discrete Event Simulation.

Spring (3) Prerequisites: CSCI 616, CSCI 626.

Methods of discrete-event simulation. Markov chains. Simulation of open and closed networks of queues. Simulation of non-stationary Poisson processes. Transient and steady-state analysis. Event list algorithms and data structures. Theoretical and empirical tests of randomness. Selected applications.

734. Distributed Computing Systems.

Fall (3) Prerequisites: CSCI 544 or equivalent.

Time and order in distributed systems. Synchronous and asynchronous systems. Models of faulty behavior in distributed systems. Paradigms of distributed computing: network mutual exclusion, deterministic agreement (Byzantine and fail-stop), elections, global state acquisition, atomic transactions. Issues in programming distributed systems. Reliable distributed systems. Distributed databases. Selected case studies.

746. Discrete-State Stochastic Models.

Spring (3) Prerequisites: CSCI 616, CSCI 626.

Logic, performance, and reliability analysis of discrete-state systems. Exploration of the state space. Queuing networks, fault trees, reliability block diagrams, task graphs, Petri nets and domain-oriented languages. Underlying stochastic processes, solutions and approximations.

749. Numerical Algorithms.

Fall or Spring (3) Prerequisites: CSCI 649, or permission of the instructor.

In-depth study of modern numerical algorithms central to solving many scientific and engineering problems, and of the techniques used to develop and analyze those algorithms, with an emphasis on algorithmic issues.

754. Performance Evaluation of Computer Systems.

Fall or Spring (3) Prerequisites: CSCI 526, CSCI 626, or permission of the instructor.

Analytical modeling techniques and their application in computer system performance modeling and prediction. Modeling of resource allocation policies in parallel systems, web server analysis, measurements and workload characterization of parallel computations and multimedia applications, hardware/software design, and bottleneck analysis.

770. Colloquium.

Fall and Spring (1,1). Graded Pass/Fail. This course may be repeated for credit.

Each full-time graduate student is required to enroll in this course. No credits earned in this course may be applied to the number of credits required for a degree. This course includes training in the responsible and ethical conduct of research, as well as discussions of fabrication, falsification, and plagiarism.

780. Advanced Topics.

Fall or Spring (1, 2, or 3 credits, depending on material). Prerequisites: Will be published in the preregistration schedule. This course may be repeated for credit.

A treatment of doctoral-level topics of interest not routinely covered by existing courses. Material may be chosen from various areas of computer science.

790. Readings in Computer Science.

Fall or Spring (1, 2, or 3 credits, depending on the material covered). Graded Pass/Fail. Prerequisites: Permission of the instructor and the Graduate Director. This course may be repeated for credit.

A description of the intended contents of the readings course must be approved by the Graduate Director before the student may register for the course. Students electing to satisfy M.S. requirements by taking 24 credits and writing a thesis may not count credits received in this course toward the required 24. Students electing to satisfy M.S. requirements by taking 32 credits may count credits received in only one offering of this course toward the required 32.

795. Research.

Fall and Spring (Hours and credits to be arranged). Graded Pass/Fail. This course may be repeated for credit.

Required of all full-time students who have not attained Research Graduate status. No credits earned in this course may be applied to the number of credits required for a degree.

800. Doctoral Dissertation.

Fall and Spring (Hours and credits to be arranged). This course may be repeated for credit.

HISTORY DEPARTMENT

For nearly eighty years, the Lyon G. Tyler Department of History Graduate Program in History has been offering students a unique opportunity to pursue Master's and Doctoral Degrees. Named for Lyon Gardiner Tyler, the College's seventeenth president, and the son of the nation's 10th president, William & Mary's Department of History is the oldest history department in the United States. Its moderate size, dedicated faculty, and distinctive history give the department a unique character among public institutions, and create a learning environment that fosters close interaction among students and teachers. The department's graduate program offers a Ph.D. in Early American and U.S. History, as well as Master's Degree Programs in Early American, U.S. and Comparative and Transnational History.

The Program prides itself on its commitment to preparing broadly trained faculty who are leaders in their fields of specialty. The topics of recent dissertations have ranged from Loyalists, Indians, and Slaves in the Deep South during the American Revolution to Race, Gender and Film Censorship in the New South. The program prepares students to be teachers and scholars, while also offering training for careers as editors and historical archaeologists, and as public history professionals in historical societies, libraries and museums. The Program's excellent placement record is testament to its success.
See http://www.wm.edu/as/history/gradprogram/placement/index.php.

The Department of History also offers a unique opportunity for students in the master's and doctoral programs to obtain practical experience in a variety of history-related career fields by competitively awarding apprenticeships in the following areas: Archives and Manuscript Collections, Editing of Historical Books and Manuscripts, Humanities Computing, International Studies, and Vernacular Architecture. All doctoral students do intensive teacher training.

Graduate students also benefit from the Department's close association with the American Studies Program, the Omohundro Institute for Early American History and Culture, the National Institute of American History and Democracy, the Colonial Williamsburg Foundation, the Wendy and Emery Reves Center for International Studies, Swem Library, and the Center for Archaeological Research, among many other local historical institutions of national importance.

Faculty

CHAIR **Leisa D. Meyer** Associate Professor (Ph.D., University of Wisconsin-Madison).

GRADUATE DIRECTOR **Cindy Hahamovitch** (Fall 2011) Professor (Ph.D., North Carolina-Chapel Hill); **Brett Rushforth** (Spring 2012) Associate Professor (Ph.D., California-Davis).

PROFESSORS **Melvin P. Ely** Kenan Professor (Ph.D., Princeton), **Christopher Grasso**[1] (Ph.D., Yale), **Ronald Hoffman**[2] (Ph.D., University of Wisconsin-Madison), **LuAnn Homza** (Ph.D., Chicago), **Scott R. Nelson** Leslie & Naomi Legum Professor (Ph.D., North Carolina-Chapel Hill), **Carol Sheriff** (Ph.D., Yale), and **James P. Whittenburg** William E. Pullen Professor (Ph.D., Georgia).

VISITING DISTINGUISHED PROFESSOR **Robert F. Engs** Visiting Harrison Professor (Ph.D., Yale).

ASSOCIATE PROFESSORS **Kveta E. Bene**s Clark G. and Elizabeth H. Diamond Associate Professor of History (Ph.D., Washington), **Chandos M. Brown** (Ph.D., Harvard), Frederick Corney Harrison Associate Professor (Ph.D., Columbia), **Philip Daileader** (Ph.D., Harvard), **Andrew H. Fisher** (Ph.D., Arizona State), **Hiroshi Kitamura** (Ph.D., Wisconsin-Madison), **Betsy O. Konefal** (Ph.D., Pittsburgh), **Laurie S. Koloski** (Ph.D., Stanford), **Paul Mapp** (Ph.D., Harvard), **Charles McGovern** (Ph.D., Harvard; on leave 2011-2012), **Ronald B. Schechter** (Ph.D., Harvard), **Robert T. Vinson** (Ph.D., Howard), **Karin Wulf**[3] (Ph.D., Johns Hopkins), and **Chitralekha Zutshi** (Ph.D., Tufts).

ASSISTANT PROFESSORS **Eric Han** (Ph.D., Columbia), **Ayfer Karakaya Stump** (Ph.D., New York University), **James La Fleur** (Ph.D., Virginia), **Kathrin Levitan** (Ph.D., Chicago), **Nicholas Popper** (Ph.D., Princeton), and **Jeremy Pope** (Ph.D., Harvard).

ADJUNCT ASSOCIATE PROFESSOR **Carl Lounsbury** (Ph.D., George Washington).

VISITING ASSISTANT PROFESSORS **Jody Allen** (Ph.D., William & Mary), **Guillaume Aubert** (Ph.D., Tulane University), **Jonathan Eacott**[4] (Ph.D., Michigan), **Susan A. Kern**[5] (Ph.D., William & Mary), **Daniel Livesay**[6] (Ph.D., Michigan), **Julie Richter** (Ph.D., William & Mary), and **Elizabeth Schlabach** (Ph.D., Saint Louis University).

LECTURERS **Marley R. Brown III**[7] (Ph.D., Brown), **Cary Carson**[8] (Ph.D., Harvard), **Beatriz B. Hardy** (Ph.D., Maryland-College Park), **Charles F. Hobson**[9] (Ph.D., Emory), **James Horn**[10] (Ph.D., University of Sussex), **Kevin P. Kelly**[11] (Ph.D., Washington), **Fredrika Teute**[12] (Ph.D., Johns Hopkins), and **Lorena S. Walsh**[13] (Ph.D., Michigan).

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[1] Editor, William and Mary Quarterly, Omohundro Institute of Early American History and Culture

[2] Director, Omohundro Institute of Early American History and Culture

[3] Book Review Editor, William and Mary Quarterly, Omohundro Institute of Early American History and Culture

[4] NEH Fellow in the Omohundro Institute of Early American History and Culture

[5] Director of the Williamsburg Collegiate Program in Early American History, Material Culture, and Museum Studies

[6] NEH Fellow in the Omohundro Institute of Early American History and Culture

[7] Director, Archaeological Excavation and Conservation, The Colonial Williamsburg Foundation

[8] Vice President of Research, The Colonial Williamsburg Foundation

[9] Editor, John Marshall Papers

[10] Vice President of Research and Abby and George O'Neill Director of the John D. Rockefeller Jr. Library

[11] Historian, Department of Historical Research, The Colonial Williamsburg Foundation

[12] Editor of Publications, Omohundro Institute of Early American History and Culture

[13] Historian, Department of Historical Research, The Colonial Williamsburg Foundation

General Description

The History Department offers a Doctoral Program in Early American and United States History, and a Masters program with specialization in Early American, United States, and Comparative and Transnational History. Doctoral students develop a minor field in a non-US geographic area such as Africa, Britain, or Latin America History or a comparative/transnational theme such as the Slave Trade, the Atlantic World or Comparative Revolutions as well as a thematic field in subjects such as African American, labor, or women's/gender history. Ph.D. students may do research in all sub-fields of American or U.S. history, including, but not limited to, Native American history, women's history, international relations, African American history, labor history, social history, cultural history, political history, and the history of sexuality. A distinguishing characteristic of our program is its apprenticeship and internship opportunities (please see below).

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)

Admission

A required supplemental application is available on the department's web page at http://www.wm.edu/history. Applicants must submit official undergraduate transcripts, three letters of recommendation, and official copies of scores from the Graduate Record Examination. A writing sample is required. A separate application is not necessary for financial aid. For full consideration, completed applications must be postmarked by December 5, 2011 for the Masters and Ph.D. programs in American and U.S. History and the Comparative and Transnational Master's program. Applications submitted after the deadline must be mailed and may be evaluated if space is available. Minimum requirements for admission include an overall academic average of 3.0 on a 4.0 scale and the completion of 24 semester hours of work in history. Additional hours in history and course work in a foreign or classical language are highly recommended.

Degree Requirements for the Master of Arts

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)
Candidates admitted to the M.A. Program as full-time students must be in full-time residence for at least two semesters and must complete all requirements by the deadline specified in the department's graduate regulations. Those admitted as part-time students must complete all degree requirements within six years of starting the program. All masters students must complete 24 credit hours of coursework, not including credits for HIST 700. For Early American and U.S. History students, these 24 credit hours will include HIST 701, 702, a research seminar (HIST 710 or 711), two courses in directed research (HIST 758), and electives. For Comparative and Transnational History students, the 24 credit hours will include HIST 701, a research seminar (HIST 713), at least one readings course in comparative history (HIST 720), two courses in directed research (HIST 758), and electives. Students must achieve a grade point average of at least 3.0 on a 4.0 scale. Candidates must demonstrate by departmental examination a reading knowledge of a foreign or classical language in which there is a significant historical literature; must pass a comprehensive examination; and must submit a thesis approved by his/her thesis committee.

Apprenticeship and Internship Programs

In addition to traditional preparation in research, the Department of History in conjunction with the Omohundro Institute of Early American History and Culture, the Earl Gregg Swem Library, the Wendy and Emery Reves Center for International Studies, the

Department of Anthropology, the Center for Archaeological Research, and the Colonial Williamsburg Foundation offers a unique opportunity for masters and first-year doctoral students to obtain practical experience in career fields related to history. Apprenticeships are available in archives and manuscript collections, the editing of historical books and magazines, international studies, humanities computing, and historical architecture. Apprenticeships commence on July 1, August 1, or late August of each year and extend to May 15 or June 30 of the succeeding year. The History Department also requires doctoral students to participate in a teaching internship that provides supervised experience in teaching college classes.

Degree Requirements for the Doctor of Philosophy

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)
At least one and a half years of coursework (not including courses taken for the M.A. degree) are required for the Doctor of Philosophy degree. Doctoral students must complete all requirements for the Master of Arts degree, including the language requirement, the thesis, and all course work, at William and Mary, or have fulfilled similar requirements at an equivalent institution by March 15 of their second year in residence (or first, in the case of students who received their M.A. elsewhere). Doctoral students with a masters degree from an equivalent Institution are also required to pass the language exam at William and Mary by March 15 of their first year in residence. In addition, candidates for the Ph.D. degree must complete at least 27 hours of graduate coursework in History (not including HIST 800) beyond the masters level within the first three semesters of residency. They must take research seminars in two separate fields of history and pass a language exam. A student who has taken required courses in the masters year need not repeat them at the doctoral level. No later than the end of the third year of graduate study, doctoral students must take a written and an oral comprehensive qualifying examination in Early American history, United States history, one thematic field, and one minor field (see above). To qualify to take the comprehensive examinations, students must have completed all coursework and any outstanding requirements by the end of the previous semester. See the History Department's graduate regulations for a list of pre-approved fields.

Description of Courses

Courses listed in this catalog are not offered every academic year. Please consult the website http://www.wm.edu/history and/or the department office for the current listing of courses offered.
Unless otherwise noted, all courses are graded using standard grading [A, B, C, D, F] scheme (See VI. Grading and Academic Progress in the section entitled 'Graduate Regulations' in this catalog) and may not be repeated for credit (See Repeated Courses requirements in the section entitled 'Graduate Regulations' in this catalog).

501, 502. Independent Study in History.
Fall and Spring (3,3) Staff.

An independent study course that may be repeated for credit as long as there is no duplication of material.

503. Colonial Virginia.
Fall and Spring (3,3) Staff.

A specialized study of the founding and development of the Virginia colony with special emphasis on the evolution of its social and political structure.

504. France in North America.

Fall or Spring (3) Staff.

An exploration of the French presence in North America from the sixteenth-century voyages of Verrazano and Cartier to the fall of Quebec in 1759, the growth of settlement and empire from Canada to Louisiana, and relations with the Indians.

518. U.S. Gilded Age.

Fall or Spring (3) Nelson.

1866-1901. Explores the collapse of Reconstruction and the rise of big business. Topics include Victorian sexuality, the Jim Crow South, craft unionism, cities in the West and literary naturalism.

533. U.S. Foreign Relations, 1763-1900.

Fall (3) Kitamura.

An examination of U.S. interactions with the wider world from 1763 to 1900. Topics include top-level policymaking, business exchange, cultural interaction, population movement, military confrontation, social control, racial affairs, and gender relations.

534. U.S. Foreign Relations, 1901-Present.

Fall or Spring (3,3) Kitamura.

An examination of U.S. interactions with the wider world from 1901 to the present day. Topics include top-level policymaking, business exchange, cultural interaction, population movement, military confrontation, social control, racial affairs, and gender relations.

537. American Cultural and Intellectual History from the Beginnings through the Early National Period.

Fall (3) C. Brown.

An interdisciplinary approach to the development of colonial and early national American culture and society, with special emphasis on the transit of European culture, regionalism and the emergence of the ideology of American exceptionalism.

538. American Cultural and Intellectual History from the Early National Period through the Early 20th Century.

Spring (3) C. Brown.

An interdisciplinary approach to the development of colonial and early national American culture and society. Explores the social construction of knowledge, race, gender and class in the 19th- and early 20th-century United States, through an intensive reading of primary sources.

541. The Caribbean.

Fall or Spring (3,3) Konefal.

A survey of the colonial history of the region followed by an analysis of the economic, social and political developments of the nineteenth and twentieth centuries in the major island and mainland states.

547. Crises of European Society.

Fall or Spring (3,3) Popper.

Selected aspects of early modern Western society, including (for example) the social and economic foundations of Renaissance culture; poverty, crime, and violence; revolution and rebellion; death, disease, and diet; humanism and reform; witchcraft, magic, and religion; the new cosmography.

559. Problems in Modern History.

Fall or Spring (3,3) Staff. This course may be repeated for credit if there is no duplication of topic.

571. Contemporary Russia.

Fall or Spring (3,3) Corney.

A seminar on topics in Russian history, 1953 to the present. Themes include the legacy of the Stalin era and issues of continuity and change in the post-Stalin years. The collapse of the Soviet Union and the problems of post-Communist Russia are also examined.

572. The Russian Revolution.

Fall or Spring (3,3) Corney.

The origins, course, and impact of revolution in twentieth-century Russia, c. 1905-1953. Considerable use is made of primary materials. Themes include the dilemmas of late imperial Russia, the impact of modernization and war, and the issue of totalitarianism.

577. History of Mexico.

Spring (3) Konefal.

Development of the Mexican nation from the Spanish conquest to the present. Sequential treatment of the interaction of Spanish and Indian cultures, expansion of the frontier, independence, nineteenth-century liberalism and caudillism, the Mexican Revolution of 1910 and its institutionalization.

590, 591. Topics in History.

Fall and Spring (3,3) Staff. This course may be repeated for credit if there is no duplication of topic.

Topics change each year. Please consult the website www.wm.edu/history and the department office for the current listing of topics offered.

600 - 687. Readings Courses.

Fall and Spring (3,3) Staff.

Readings courses in fields as indicated by course title. These courses are open only to candidates for advanced degrees. Instructor may require students to audit relevant undergraduate lectures and take a final exam.

607. Introduction to Historical Archaeology & Material Culture.

Summer (0) Staff. Graded Pass/Fail. This course may be repeated. Prerequisite: permission of instructor.

612. European History, 1357-1598.

Fall or Spring (3,3) Homza.

615, 616. European History, 1648-1871.

Fall and Spring (3,3) Schechter.

619. England Under the Tudors, 1485-1603.

Fall (3) Popper, Staff.

A survey of developments in English political, social, intellectual, cultural, and religious history from the ascension of Henry VII in 1485 to the death of Elizabeth I in 1603.

620. Britain Under the Stuarts, 1603-1714.

Spring (3) Popper, Staff.

A survey of the political, religious, cultural, social, and intellectual history of the British Isles from the coronation of James VI and I in 1603 to the death of Queen Anne in 1714.

624. African Diaspora (II).

Fall or Spring (3,3) Vinson.

This course examines the African Diaspora since 1800 with major themes including the end of slavery, the fight for full citizenship and the close interactions between diasporic blacks and Africans.

625. The Rise and Fall of Apartheid.

Fall or Spring (3,3) Vinson.

This class explores the rise and fall of apartheid, the system of rigid racial segregation and domination that existed in South Africa from 1948 to 1994. It examines the successful anti-apartheid movement but also considers apartheid's legacy in contemporary South Africa.

628. Modern Japanese History.

Fall or Spring (3,3) Han.

A history of Japan from the Tokugawa period (1600-1868) to the present, with emphasis on the 19th, 20th and 21st centuries.

629. Modern Chinese History.

Fall (3) Staff.

A history of China from 1644 to the present focusing on China's imperial system, the experiment with republican government, and China under communist rule since 1949.

630. America and China: U.S.-China Relations since 1784.

Spring (3) Staff.

A study of U.S.-China relations from 1784 to the present, with special attention to Sino-American relations in the 20th and 21st centuries.

631. History of Spain

Fall or Spring (3,3) Homza.

A survey of Spanish history from 1478 to 1978 that also asks students to investigate cultural, political and social issues in depth, such as the goals of inquisitors, the question of Spanish decline and the context of the Civil War.

633. History of Germany to 1918.

Fall (3) Benes, Staff.

Origins and establishment of the modern German state to the First World War.

634. History of Germany since 1918.

Spring (3) Benes, Staff.

Establishment and course of Hitler's Third Reich, development of two Germanies since 1945, and their subsequent reunification.

637. History of France, 1648 to 1800.

Fall (3) Schechter, Staff.

Intensive examination of a pre-industrial society with special emphasis on social, economic and intellectual problems during the ancient regime and Revolution.

638. History of France, 1800 to the Present.

Spring (3) Schechter, Staff.

1800 to the present with special attention to social and economic problems as well as to the politics of 20th and 21st century France.

639, 640. Latin American History.

Fall or Spring (3,3) Konefal.

648. The History of Russia to 1800.

Fall (3) Corney.

The political, cultural and intellectual development of Russia. From Kievan Rus' to the end of the 18th century, tracing the Mongol occupation, the rise of Muscovy and the Romanov dynasty.

649. The History of Russia since 1800.

Spring (3) Corney.

The political, cultural and intellectual development of 19th and 20th century Russia, tracing the twilight of the Romanovs, the rise of socialist thought, and the Communist state.

651, 652. African History.

Fall and Spring (3,3) La Fleur.

655. Medieval Europe to 1000.

Fall (3) Daileader.

Europe from the fall of the Roman Empire to the Viking invasions. Investigates the triumph of Christianity over paganism, barbarian invasions, interaction of German and Roman societies, rise and collapse of Carolingian Empire.

656. Medieval Europe since 1000.

Spring (3) Daileader.

Europe during the High and Late Middle Ages. Emphasis on social, cultural and religious transformations of these periods; some attention to political narrative.

658. The European Renaissance.

Fall or Spring (3,3) Homza.

Investigation into the intellectual emphases and social and political contexts of humanist practices in Europe between 1314-1598. Attention to historiography and historical method.

659. The Reformation in Western Europe.

Fall or Spring (3,3) Homza.

An investigation into the Catholic and Protestant Reformations in early modern Europe, 1500-1700. Examination of the foundations and effects of religious upheaval and codification. Attention to literacy, printing, the family, the creation of confessional identity and historiography.

663. The Age of Absolutism and Revolution in Europe, 1648-1789.

Fall (3) Schechter.

An intensive survey of Europe in transition: absolutism, enlightenment, enlightened despotism.

664. The Age of Absolutism and Revolution in Europe, 1789-1870.

Spring (3) Schechter.

An intensive survey of Europe in transition: revolution, industrialization and the emergence of the modern state.

669. The History of Britain from the mid-15th to the late 18th Centuries.

Fall (3) Levitan, Staff.

A survey of the political, social, economic, and cultural history of Britain.

670. The History of Britain from the late 18th Century to the Present.

Spring (3) Levitan, Staff.

A survey of the political, social, economic, and cultural history of Britain.

673. East Central Europe.

Fall or Spring (3,3) Koloski, Staff.

Modern history of the east-central region of Europe between Germany and Russia. Topics include: 19th century multi-national empires, 20th century (re)emergence of nation-states, citizens' struggles to define political, social, and cultural identities despite foreign domination, and post-1989 developments.

679, 680. Modern Middle East.

Fall and Spring (3,3) Karakaya Stump, Staff.

691. Intellectual History of Modern Europe: Renaissance to the Enlightenment.

Fall (3) Benes, Staff.

Cultural and intellectual development of the Western world from the end of the Middle Ages to the Enlightenment.

692. Intellectual History of Modern Europe: 19th to the 21st Centuries.

Spring (3) Benes, Staff.

Cultural and intellectual development of the Western world from the Enlightenment to the present.

700. Thesis.

Fall and Spring (3,3) Hahamovitch, Rushforth. This course may be repeated for credit.

Research and writing for Master's thesis.

701-702. History and Literature of History.

Fall and Spring (3,3) Staff.

A review of the principal themes of modern scholarship on Early American, United States, or Comparative history. Coverage of major writers, the topics that most attracted their attention, and the schools of interpretation into which they may be grouped. (Open only to candidates for advanced degrees.)

701-01. American History to 1870.

Fall (3) Brown.

701-02. Comparative and Transnational History.

Fall (3) Benes.

702. American History from 1870.

Spring (3) Kitamura.

705. Teaching History.

Spring (1) Mapp. Graded Pass/Fail.

An exploration of the variety of teaching philosophies, techniques, and outcomes in higher education, taught by the faculties of History and American Studies. Required of all doctoral students who wish to serve as teaching fellows, but open to all degree candidates in those fields.

710 - 713. Research Seminars.

Fall (3) Staff.

Research seminars in fields as indicated by course title. These courses are open only to candidates for advanced degrees. These courses include training in the responsible and ethical conduct of research, as well as discussions of fabrication, falsification, and plagiarism.

710. Research Seminar: America to 1815.

Fall (3) Wulf.

711. Research Seminar: U.S. History, 1815-present.

Fall (3) Ely.

713. Research Seminar: Comparative History.

Fall (3) Homza.

715. Readings Seminars in Early American History to 1815.

Fall and Spring (3,3) Staff. This course may be repeated for credit when topic differs.

Readings seminars explore, primarily through secondary literature, specific areas or aspects of history. (Open only to candidates for advanced degrees.)

Topics frequently offered include:

Scourge: the North American Plantation, Economy and Geography. Nelson.
France and the Atlantic World. Rushforth.
Native American History to 1763. Rushforth.
Nature and Culture in the Long Eighteenth Century. Brown.
America's Long Eighteenth Century: The Making of the Modern? Wulf.
Gender, Family, and Politics in the Early Modern Atlantic World. Wulf.
Comparative Atlantic Revolutions. Mapp.
Early American Republic. Grasso
Puritans and Puritanism. Brown.
Religion and American History to 1865. Grasso.
U.S. History, 18th-century Intellectual/Cultural. Grasso.
Readings in the American Revolution Era. Hoffman, Mapp.
Readings in Early American History. Whittenburg, Mapp, Grasso, Rushforth.
African-American History to 1865. Ely.
Southern Society to 1861. Ely.
North American Slave Trades. La Fleur.

716. Reading Seminars in U.S. History, 1815-present.

Fall and Spring (3,3) Staff. This course may be repeated for credit when topic differs.

Readings seminars explore, primarily through secondary literature, specific areas or aspects of history. (Open only to candidates for advanced degrees.)

Topics frequently offered include:

Crash: America's Financial Panics, 1819-2009. Nelson.
America in the World. Kitamura.
American Foreign Relations. Kitamura.
American Popular Culture. McGovern.
American West since 1890. Fisher.
African-American History to 1865. Ely.
Southern Society to 1861. Ely.
Religion and American History to 1865. Grasso.
Workers in American Life. Hahamovitch.
19C. Social History. Sheriff.
Civil War Era. Sheriff.
Native American History since 1763. Fisher.
U.S. Immigration History. Hahamovitch.
Sexuality in America. Meyer.
Women/Gender in the US. Meyer.
19C. American West. Sheriff, Fisher.
American West. Sheriff.
Gilded Age. Nelson.
African-American History since 1865. Ely.
Nation, Race and Citizenship in America. McGovern.
Life and Death in the 19C. Brown.
Regional Cultures of the South. Nelson.
America in the World. Kitamura.

720. Readings Seminar in Comparative or Transnational History.

Fall and Spring (3,3) Staff. This course may be repeated for credit when topic differs.

Readings seminars explore, primarily through secondary literature, specific areas or aspects of history. (Open only to candidates for advanced degrees.)

Topics frequently offered include:

Africans in the Atlantic World. La Fleur.
Approaches to World History. Schechter.
Comparative Race Relations. Konefal.
Comparative Revolutions. Corney.
Comparative Slavery.
Empires and Imperialism. Zutshi.
Transnational Environmental History. Zutshi.
History and Memory in Europe and America. Corney.
Nations and Nationalism. Benes.
Religious Violence. Homza.

721 - 746. Advanced Readings Courses.
Fall or Spring (3,3) Staff. This course may be repeated for credit when topic differs.

Readings courses in fields as indicated by course title. These courses are open only to candidates for advanced degrees. Students should secure instructor's permission during the pre-registration period.

721, 722. Early American History to 1815.
Fall and Spring (3,3) Staff.

723. United States History Since 1815.
Fall and Spring (3,3) Staff.

725. Colonial Period of Latin American History.
Fall or Spring (3,3) Staff.

726. National Period of Latin American History since 1824.
Fall or Spring (3,3) Konefal.
(Normally intended for students preparing a doctoral field in Latin American history.)

731. Medieval Europe: 400-1450.
Fall and Spring (3,3) Daileader.

732. Europe: 1400-1648.
Fall and Spring (3,3) Homza, Koloski.

733. Europe 1648-1815.
Fall and Spring (3,3) Schechter.

734. Europe 1815-1945.
Fall and Spring (3,3) Benes, Koloski.

735. Russia and Europe 1905 to the Present.
Fall and Spring (3,3) Corney.

736. England to 1485.
Fall and Spring (3,3) Staff.

737. England 1485-1714.
Fall and Spring (3,3) Popper.

738. England since 1714.
Fall and Spring (3,3) Levitan.

741. East Asia: 1600-1850.
Fall and Spring (3,3) Staff.

742. East Asia 1850 to Present.
Fall and Spring (3,3) Staff.

743. Africa: 1800 to the Present.
Fall and Spring (3,3) La Fleur, Vinson.

745. The Modern Middle East: 1500 to 1800.

Fall and Spring (3,3) Karakaya Stump.

746. The Modern Middle East: 1800 to the Present.

Fall and Spring (3,3) Karakaya Stump.

758. Directed Research.

Fall and Spring (3,3) Staff. Instructor's permission required. This course may be repeated for credit.

759. Topics in History.

Fall and Spring (3,3) Staff. Graded Pass/Fail. Instructor's permission required.

An examination of selected topics in history. This course may be repeated once when instructor determines there will be no duplication of material. (Open only to doctoral candidates.)

800. Dissertation.

Fall and Spring (1) Hahamovitch, Rushforth. This course may be repeated for credit.

Research and writing of doctoral dissertation.

PHYSICS DEPARTMENT

The Physics Department offers graduate study and research which leads to the Ph.D. degree. The department consists of thirty instructional faculty members, fifteen additional physicists in purely research positions, and 60 full-time graduate students. Additions to the research areas listed below include plasma and non-linear physics and related research includes accelerator physics (in cooperation with Jefferson Lab) and material characterization (in cooperation with NASA-Langley Research Center). The department offers a wide range of undergraduate and graduate courses of instruction. It also has strong links with the Applied Science Department and Computational Science Cluster.

Atomic and Optical Physics

Experimental research areas include intense laser-matter interaction, femtosecond laser physics, slow and stored light, ultra-cold quantum gases (Bose-Einstein condensates and degenerate Fermi gases), and the study of biological systems using AMO techniques. The theory program includes the study of classical trajectories and chaos in atomic and molecular systems and their correlation with quantum mechanics.

Computational Physics

Research in this area includes the studies of turbulence, macroscopic nonlinear systems, soliton theory, wave propagation, signal processing, Monte Carlo simulations, ab initio calculations and lattice quantum chromodynamics. These studies have applications within many fields of physics, including laser science, wave dynamics, quantum computing, plasma physics, condensed matter physics, nuclear physics and particle physics.

Condensed Matter Physics

There are active experimental and theoretical programs in superconductivity, magnetism, thin film deposition, carbon nanomaterials, nuclear magnetic resonance and ultrafast laser studies of materials. A new ultra-high field NMR facility with a 17.6 Tesla magnet, available at only a handful of other schools, provides opportunities for structure and dynamics studies in physical and biological materials.

Nuclear and Hadronic Physics

William & Mary has an active program in nuclear and hadronic physics, complemented by its proximity to Jefferson Lab. This state-of-the-art facility provides a high-energy electron beam used primarily for studying the substructure of the proton and neutron at the quark and gluon level. Current experimental and theoretical research is focused on understanding the basic properties of the nucleon, including the origin and distribution of its spin, charge and magnetic moment. Also at Jefferson Lab, the experimental nuclear physics group is preparing for an upcoming experiment that will search for physics beyond the standard model at the TeV scale.

High Energy Particle Physics

Particle physics research is aimed at possible new physics that lies beyond the current standard model of known elementary particles and their interactions. Theoretical research includes work on grand unified theories, supersymmetry, extra spatial dimensions and cosmology. The experimental high energy group is active in the search for neutrino oscillations using a neutrino beam produced at Fermilab, currently the largest proton-antiproton collider in the world. The department maintains labs for detector construction and testing, a polarized target lab and a computing farm for large-scale data analysis.

Faculty

CHAIR **David S. Armstrong** Chancellor Professor (Ph.D., British Columbia).

GRADUATE DIRECTOR **Jeffrey K. Nelson** Cornelia B. Talbot Term Distinguished Associate Professor of Physics (Ph.D., Minnesota).

PROFESSORS **Todd D. Averett** (Ph.D., Virginia), **Carl E. Carlson** Class of 1962 Professor (Ph.D., Columbia), **Christopher D. Carone** (Ph.D., Harvard), **William E. Cooke** (Ph.D., MIT), **John B. Delos** (Ph.D., MIT), **Keith A. Griffioen** (Ph.D., Stanford), **Gina L. Hoatson** (Ph.D., East Anglia), **William J. Kossler** (Ph.D., Princeton), **Henry Krakauer** (Ph.D., Brandeis), **R. Alejandra Lukaszew** Virginia Microelectronics Consortium Professor of Applied Science and Physics (Ph.D., Wayne State), **Dennis M. Manos** CSX Professor of Applied Science (Ph.D., Ohio State), **Robert D. McKeown** Governor's Distinguished CEBAF Professor (Ph.D., Princeton), **Michael R. Pennington** Governor's Distinguished CEBAF Professor (Ph.D., London), **Charles F. Perdrisat** (D.Sc., ETH, Zurich), **Marc T. Sher** (Ph.D., Colorado), **Eugene R. Tracy** Chancellor Professor (Ph.D., Maryland), **George M. Vahala** (Ph.D., Iowa), and **Shiwei Zhang** (Ph.D., Cornell).

ASSOCIATE PROFESSORS **Joshua Erlich** (Ph.D., MIT), and **Konstantinos N. Orginos** (Ph.D., Brown).

ASSISTANT PROFESSORS **Seth A. M. Aubin** (Ph.D., SUNY, Stony Brook), **Wouter Deconinck** (Ph.D., Michigan), **William Detmold** (Ph.D., Adelaide), **Michael A. Kordosky** (Ph.D., Texas, Austin), **Irina Novikova** (Ph.D., Texas A&M), **M. Mumtaz Qazilbash** (Ph.D., Maryland, College Park), **Enrico Rossi** (Ph.D., Texas, Austin), and **Patricia L. Vahle** (Ph.D., Texas, Austin).

PROFESSORS EMERITI **Roy L. Champion** Chancellor Professor (Ph.D., Florida), **Morton Eckhause** (Ph.D., Carnegie-Mellon), **Franz L. Gross** (Ph.D., Princeton), **John R. Kane** (Ph.D., Carnegie-Mellon), **John L. McKnight** (Ph.D., Yale), **Kenneth G. Petzinger** (Ph.D., Pennsylvania), **Edward A. Remler** (Ph.D., North Carolina), **Harlan E. Schone** (Ph.D., California, Berkeley), **Anthony Thomas** Governor's Distinguished CEBAF Professor (Ph.D., Flinders), **Hans C. von Baeyer** Chancellor Professor (Ph.D., Vanderbilt), **J. Dirk Walecka** Governor's Distinguished CEBAF Professor (Ph.D., MIT), and **Robert E. Welsh** Chancellor Professor (Ph.D., Pennsylvania State).

TJNAF PROFESSOR **Roger D. Carlini** (Ph.D., New Mexico).

ADJUNCT PROFESSORS **Peter E. Bosted** (Ph.D., MIT), **Alfred R. Osborne** (Ph.D., Houston), **Anne C. Reilly** (Ph.D., Michigan), **David Richards** (Ph.D., Cambridge), **Marc Vanderhaeghen** (Ph.D., Ghent), and **Stuart A. Wolf** (Ph.D., Rutgers).

ADJUNCT ASSOCIATE PROFESSOR **Paul M. Danehy** (Ph.D., Stanford).

RESEARCH PROFESSOR **Malathy Devi Venkataraman** (Ph.D., Kerala).

RESEARCH ASSOCIATE PROFESSOR **D. Chris Benner** (Ph.D., Arizona).

RESEARCH ASSISTANT PROFESSOR **Eugeniy Mikhailov** (Ph.D., Texas A&M).

DIRECTOR OF TEACHING LABS **A. Dayle Hancock** (Ph.D., U. Houston).

General Description

The mission of the Physics Department at the College of William and Mary is the creation and dissemination of knowledge of the physical world through teaching, research, and public service.

The Department is committed to excellence in its teaching. At the graduate level, the Department offers a full complement of courses consistent with the requirements of a doctoral program. The department recognizes that faculty research activity is an essential ingredient in sustaining excellence in teaching.

The Department carries out experimental and theoretical research in many subfields, and the results are communicated in refereed journals, in conferences and seminars, and

in books. The active participation of graduate and undergraduate students in research is integral to these efforts and is a major component of their education. Mission is to understand the fundamental origin and the mathematical description of physical phenomena. Graduate students learn to conduct original scientific research in physics. Currently the Department of Physics and federal grants support active research in the following areas:

Focus/Specialization of Program

- Atomic, Molecular, and Optical physics, experimental and theoretical: Ultrafast lasers, stored light, ultra-cold quantum degenerate gases, laser biophysics, Rydberg atom spectroscopy and semiclassical theories.
- Computational Physics.
- Condensed Matter Physics, experimental and theoretical: First principles calculation of piezoelectrics (Center for Piezoelectrics by Design), Quantum Monte Carlo simulations, magnetic multilayers, surfaces and interfaces, muon spin rotation, and solid state nuclear magnetic resonance (high field NMR Lab), metallic thin films, magnetic nanostructures.
- Nuclear and Particle Physics, experimental and theoretical: Measurements of the structure of the nucleons and nuclei via electromagnetic and electroweak interactions, hyper-polarized nuclear targets, searches for physics beyond the standard model via electroweak interactions, particle theory, supersymmetry, extra dimensions and Higgs physics, neutrino masses and mixing, long baseline neutrino oscillations, neutrino interactions on nucleons and nuclei, particle astrophysics.
- Plasma and nonlinear physics, theoretical: turbulence simulations, the basic theory of linear and nonlinear waves in plasmas and fluids, and cardiac dynamics.
- Strong links with the interdisciplinary Applied Science Department.

Among the many components of public service, departmental members give lectures to general audiences, organize public telescope viewings, offer courses for high school teachers seeking further advanced training, and write books to explain physics to the general public. The Department also serves the wider national and international communities through scientific leadership in various organizations, service on review panels, and on advisory committees.

Admission

The Department follows the general College-wide admission rules; it requires applicants to submit their scores for the GRE subject test (Physics) as well as the GRE general test. Although exceptions are made, it is recommended that graduate students begin their course work in the fall semester. However, new students who will be supported during the academic year may receive research assistantships for the summer before they begin their formal course work if funds are available..

Degree Requirements for the Master of Science

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)
The candidate must complete a program of courses required by the Department. This program depends on the candidate's preparation and special interests, but will include PHYS 601, 603, 610, 621, 622, and 630. The candidate must take the Ph.D. qualifying exam. This exam deals with the undergraduate material, the content of the first-year graduate courses and colloquia. There are two possible outcomes of the qualifying exam: pass or

not pass at the Ph.D. level. Passing at the Ph.D. level satisfies the exam requirement for an M.S. degree. Otherwise, the Physics faculty will consider the qualifying exam score, along with academic performance in course work and research performance (if any), in order to determine whether the standards for a Master of Science degree are met. The candidate is required to register for Colloquium, (PHYS 650) for a minimum of two semesters of residence. In addition, the candidate must accumulate 32 credit hours, including registering for PHYS 651 or 652 to obtain a minimum of two semesters teaching experience

Degree Requirements for the Doctor of Philosophy

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)
The candidate must complete a program of courses required by the Department. This program depends on the candidate's preparation and special interests, but, in addition to the master's level courses, will include: PHYS 611, 721, an additional semester of Colloquium, and either Teaching or Research. The candidate must pass examinations that test familiarity with the principal fields of physics. Details of procedure will vary. It is required that the candidate pass the qualifying examination and demonstrate competence in several advanced topics courses. The candidate must perform research, which is an original and substantial contribution. The dissertation must be approved by a faculty committee and successfully defended in a public oral examination. Students have seven (7) years from the term of admission to the graduate program for the completion of all MS/PhD degree requirements. Extensions to this limit are considered according to the extension policy as outlined in the section entitled 'Graduate Regulations' at the front of this catalog.

Description of Courses

Unless otherwise noted, all courses are graded using standard grading [A, B, C, D, F] scheme (See VI. Grading and Academic Progress in the section entitled 'Graduate Regulations' in this catalog) and may not be repeated for credit (See Repeated Courses requirements in the section entitled 'Graduate Regulations' in this catalog).

600. Independent Study.

Fall, Spring (3,3) Staff.

Course concerning special topics in physics not covered in regular course offerings. This course may be repeated for credit if instructor determines there will be no duplication of material.

601. Classical Mechanics.

Fall (4) Deconinck.

The mechanics of particles and rigid bodies, methods of lagrangian and hamiltonian mechanics, relativistic mechanics, approximation techniques.

603. Mathematical Physics.

Fall (4) Vahala.

Complex variables and analytic functions. Vector spaces (finite dimensional and infinite dimensional), operators and matrix representations.

610. Classical Electricity and Magnetism-I.

Spring (4) Cooke.

Electrostatics. Solution of boundary value problems. Green's functions and direct solution of Laplace's equation. Magnetostatics and steady currents. Maxwell's equations and plane wave solutions.

611. Classical Electricity and Magnetism-II.

Fall (3) Cooke. Prerequisite: PHYS 610.

Waves inside conducting boundaries. Radiation from simple current systems, spherical waves and multipole radiation. Covariant formulation of electromagnetism. Interaction of radiation with matter.

621. Quantum Mechanics-I.

Fall (4) Rossi.

Axiomatic development of wave mechanics and the Schroedinger equation in one and three dimensions; wave packets, scattering theory.

622. Quantum Mechanics-II.

Spring (4) Zhang. Prerequisite: PHYS 621.

Scattering theory; spin; matrix methods; symmetry; perturbation theory and other approximate methods; identical particles.

630. Statistical Physics and Thermodynamics.

Spring (4) Delos. Prerequisites: PHYS 601, PHYS 621.

Statistical ensembles and averages, classical equilibrium, thermodynamics and statistical mechanics, quantum statistics, kinetic theory and transport properties.

650. Physics Colloquium.

Fall and Spring (1,1) Armstrong. Graded Pass/Fail. This course may be repeated for credit.

Includes presentations by invited speakers on areas of active research in physics. The course also will include an overview of physics research at W&M and training in the responsible and ethical conduct of research.

651, 652. Teaching Physics.

Fall and Spring (2,2) Armstrong. Graded Pass/Fail. This course may be repeated for credit.

Designed for entering students teaching a lab or tutoring one of our undergraduate courses. Respective faculty will instruct students in relevant ways.

690. Advanced Topics in Physics.

Fall and Spring (Hours and credits to be arranged.) Staff.

Special topics of current interest. This course may be repeated for credit when the instructor determines there will not be a duplication of material.

695. Research.

Fall and Spring (1-12) Armstrong. This course may be repeated for credit.

702. Advanced Mathematical Physics.

Spring (3) Staff. Prerequisite: PHYS 603. (Not offered Spring 2012)

Differential equations, Green's functions, some hypergeometric functions, group theory, representation of groups.

721. Field Theory and Relativistic Quantum Mechanics.

Fall (3) Carlson. Prerequisite: PHYS 622.

Classical field theories, Dirac Equation, canonical quantization, Interacting field theories, Feynman diagrams. Relation to non-relativistic many-body theory, and applications to atomic transitions. Quantum electrodynamics and introduction to radiative corrections.

722. Quantum Field Theory.

Spring (3) Orginos. Prerequisite: PHYS 721.

Functional integral quantization of field theories. Quantization of gauge theories. Renormalization. Spontaneous Symmetry Breaking and the Higgs mechanism.

741, 742. Solid State Physics.

Fall and Spring (3,3) Zhang, Rossi. Prerequisites: PHYS 622, PHYS 630.

Introduction to solid state physics; crystal structure, phonons, electrons, electric and magnetic properties, impurities, elementary excitations, band theory and experiment, correlation function methods.

761, 762. Atomic and Molecular Processes.

Fall and Spring (3,3) Staff. Prerequisite: PHYS 622. (Not offered Fall 2011)

Theory of atomic structure; emission and absorption of radiation; fine and hyperfine structure; coupling schemes. Molecular structure and intermolecular forces; atomic and molecular collisions. Modern applications.

771, 772. Nuclear and Particle Physics.

Spring and Fall (3,3) Detmold. Prerequisite: PHYS 622.

Two-nucleon forces and the deuteron; nucleon scattering and polarization; nuclear systematics and models. Unitary symmetry; quarks and leptons, electrodynamics of fermions; weak interactions, QCD, and the standard model.

773, 774. Advanced Particle Physics.

Fall and Spring (3,3) Staff. Prerequisite: PHYS 622. (Not offered Fall 2011)

Topics of current interest in strong, electromagnetic, and weak interactions. This course may be repeated for credit when the instructor determines that there will not be a duplication of material.

783. Plasma Physics.

Fall (3) Staff. (Not offered Fall 2011)

An introduction to plasma physics and magnetohydrodynamics. Particle orbit theory, macroscopic equations, waves in collisional and collisionless plasmas. Vlasov equation.

784. Advanced Plasma Physics.

Spring (3) Staff. Prerequisite: PHYS 783. (Not offered Spring 2012)

Selected topics such as plasma waves in a magnetic field, waves in a bounded plasma, plasma kinetic theory, and plasma radiation.

786. General Relativity and Cosmology.

Spring (3) Staff.

Introduction to general relativity, tensor analysis, gravitational field equations, gravitational waves, Schwarzschild and Kerr solutions, cosmological models, gravitational collapse.

790. Advanced Topics in Physics.

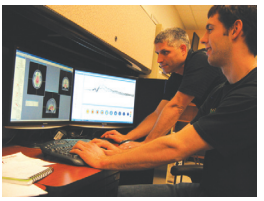
Fall and Spring (Hours and credits to be arranged.) Staff.

Special topics of current interest. This course may be repeated for credit when the instructor determines there will not be a duplication of material.

800. Doctoral Dissertation.

Fall and Spring (1-12) Armstrong. This course may be repeated for credit.

PSYCHOLOGY DEPARTMENT



The Master's Program in Psychology is research-oriented and designed to prepare students for admission to Ph.D. programs in all areas of psychology. Established in 1953, the M.A. program is a selective one, admitting approximately 8 applicants per year. The program's small size allows for close interaction among students and faculty and, therefore, superior training for the students in the program. Of the program's graduates who apply for admissions to doctoral work, over 80% are accepted.

There is an immediate and continuing emphasis on research. Faculty support student interests in a wide range of research areas, including neuroscience, social, cognitive, clinical, and developmental psychology. In 2009, the Psychology Department moved into the new Integrated Science Center building. Students complete two major research projects (a "first-year project" and a second-year thesis). In addition to pro-seminars on various topics in psychology, students take a professional development course which is unique among MA programs, for it is devoted to the explicit training of students in becoming a professional psychologist. In particular, it focuses on developing working knowledge of writing up research for publication, giving oral and poster presentations at conferences, applying for grants, and applying for Ph.D. programs in psychology.

Students at all levels are integrally involved in the research done in the Psychology Department. In many cases, faculty members develop and work with research teams comprised of undergraduate and M.A. students. As a team, the group collaborates to design, conduct, analyze, and publish the work. Students regularly become co-authors of articles reporting the studies in professional journals.

Faculty

CHAIR **Janice L. Zeman** Professor (Ph.D., Vanderbilt).
GRADUATE DIRECTOR **Joshua A. Burk** Associate Professor (Ph.D., New Hampshire).
PROFESSORS **Pamela S. Hunt** (Ph.D., SUNY-Binghamton) (on leave 2011-12), **Lee A. Kirkpatrick** (Ph.D., Denver), **Harvey J. Langholtz** (Ph.D.,Oklahoma), **John B. Nezlek** (Ph.D., Rochester) (on leave 2011-12), **Michael P. Nichols** (Ph.D., Rochester), **Glenn D. Shean** (Ph.D., Arizona), and **W. Larry Ventis** (Ph.D., Tennessee).
ASSOCIATE PROFESSORS **Christopher T. Ball** (Ph.D., Flinders Univ. South Australia) (on leave Spring 2012), **Robert C. Barnet** (Ph.D., SUNY-Binghamton), **Constance J. Pilkington** Associate Professor (Ph.D., Georgia) (on leave Fall 2011), **Jennifer A. Stevens** (Ph.D., Emory), **Todd M. Thrash** (Ph.D., Rochester), and **Peter M. Vishton** (Ph.D., Cornell) (on leave 2011-12).
ASSISTANT PROFESSORS **Danielle H. Dallaire** (Ph.D., Temple), **Cheryl L. Dickter** (Ph.D., UNC-Chapel Hill), **Catherine A. Forestell** (Ph.D., Dalhousie Univ., NS, Canada), **Paul D. Kieffaber** (Ph.D., Indiana University), and **Joanna Schug** (Ph.D., Hokkaido University, Japan).
PROFESSORS EMERITI **Joseph Galano** (Ph.D., Bowling Green State), and **Neill P. Watson** Research Professor (Ph.D., Harvard).
VISITING ASSISTANT PROFESSORS **M. Christine Porter** (Ph.D., New Hampshire), **Raychul Goldenberg-Bivens** (Psy.D., Virginia Consortium), **Meghan Sinton** (Ph.D., Penn State), and **Paul Story** (Ph.D., Virginia Commonwealth).
ADJUNCT FACULTY **Douglas M. Gross** (Ph.D., Minnesota), and **Fredrick P. Frieden** (Ph.D., Virginia Commonwealth University).

General Description

The general Psychology M.A. program is a research-oriented program designed to prepare students for admission to Ph.D. programs in all areas of psychology. The program often admits good students whose ability, motivation, and experience may not be adequately reflected in their standardized test scores or GPA. Our students are expected to complete the full-time two-year program of course work and research and to continue on to quality Ph.D. programs. Fall admissions only. Minority applications are encouraged.

Admission

The Graduate Record Exam is required for admission. Applicants for whom English is a second language must also submit scores on the Test of English as a Foreign Language (TOEFL). All application materials must be postmarked by February 15th.

Applicants must have successfully completed courses in Statistics and Experimental Psychology/Research Methods.

Degree Requirements for the Master of Arts

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)
All students are expected to be in full-time residence for two years and are required to take PSYC 602, 604, 605, 607, 608, 618-619, 631, 633, 695-696, 700, and 706. Enrollment in PSYC 620 is required each semester. In order to continue in the program a student must earn a 3.0 (B) average over all courses taken the first year in residence.In order to be eligible for an assistantship in the second year, a student must have a minimum 3.0 GPA in the required first-year courses (Proseminars 631, 633, and 695-696). Professional behavior, as described in the Ethical Standards of the American Psychological Association, will also be considered in making decisions concerning retention and eligibility for an assistantship. Additional requirements are detailed in the Departmental policy statement

concerning the graduate program.

Description of Courses

Unless otherwise noted, all courses are graded using standard grading [A, B, C, D, F] scheme (See VI. Grading and Academic Progress in the section entitled 'Graduate Regulations' in this catalog) and may not be repeated for credit (See Repeated Courses requirements in the section entitled 'Graduate Regulations' in this catalog).

500. Topics in Psychology.

Fall and Spring (3,3) Staff.

Course concerning special topics not covered in detail in regular course offerings. This course may be repeated for credit when the instructor determines there will be no duplication of material.

602. Proseminar in Cognition and Thinking.

Spring (3) Ball, Stevens, Staff.

An examination of the research and theory that helps define and explain the structure and function of the mind. The emphasis is on information processing in the registration, encoding, and retrieval of knowledge as well as its creative application of solutions to problems.

604. Proseminar in Behavioral Neuroscience.

Spring (3) Hunt, Burk, Staff.

The study of behavior in the context of the physiology of the organism. Selected topics will be used to illustrate the research techniques and investigative procedures commonly employed by physiological psychologists.

605. Proseminar in Psychopathology.

Fall (3) Shean.

A critical examination of theory and research on the etiology and treatment of the major forms of psychopathology.

607. Proseminar in Personality.

Spring (3) Goldenberg-Bivens, Thrash, Staff.

An examination of significant historical and contemporary issues in the study of personality. Emphasis will be placed upon questions of theoretical importance and upon the methodology of research in personality.

608. Proseminar in Social Psychology.

Fall (3) Dickter, Staff.

A survey of classic and contemporary theory and research in social psychology. Topics include social cognition, interpersonal relationships, and interpersonal interaction.

618, 619. Professional Development Seminar.

Fall and Spring (2,2) Burk.

This course will foster the professional development of our M.A. students by holding weekly seminars over the first two semesters of the M.A. program. Research skills will be the primary focus of the course. They will consist of readings and discussions of philosophy of science, research methodology and design, research ethics including fabrication, falsification and plagiarism, critical analysis of published studies, and research presentation.

620. Colloquium.

Fall and Spring (1,1) Burk.Graded Pass/Fail. This course may be taken for audit.

This course may be repeated for credit when the instructor determines there will be no duplication of material.

631. Advanced Statistics.

Fall (3) Kirkpatrick. Corequisite: PSYC 631L.

A course in small sample theory, nonparametric statistics, analysis of variance and experimental design with an introduction to computer programming.

631L. Advanced Statistics Laboratory.

Fall (0) Kirkpatrick. Corequisite: PSYC 631,633.

633. Multivariate Analysis.

Spring (3) Kirkpatrick. PSYC 631 or equivalent. Corequisite: PSYC 633L.

An introduction to multivariate statistics including such topics as multiple regression, multivariate analysis of variance, and factor analysis.

633L. Multivariate Analysis Laboratory.

Spring (0) Kirkpatrick. Corequisite: PSYC 633.

690. Directed Readings.

Fall and Spring (v,v) Burk. This course may be repeated for credit.

Credit will be from one to three hours depending upon work undertaken.

695-696. Independent Research.

Fall and Spring (v,v) Burk.

This course constitutes the research apprenticeship for all students in the first year of the M.A. program. Students design and conduct research with a faculty advisor of their choice. (Previously numbered PSYC 625)

700. Thesis.

Fall and Spring (v,v) Burk. This course may be repeated.

Must currently be enrolled in the Graduate Psychology program.

706. Proseminar in Life Span Developmental Psychology.

Fall (3) Dallaire, Zeman, Staff.

An overview of current issues, theories and research in human development across the lifespan.

The Thomas Jefferson Program in Public Policy at the College of William & Mary

The Master of Public Policy degree is designed to

. . . prepare students for demanding professional careers as policy analysts. MPP graduates work in the public sector and with the broad range of private firms that interact closely with government entities at the Federal, state and local levels. The better the foundation, the greater the career potential, and so the MPP program at William and Mary emphasizes developing strong analytic and statistical skills. A range of elective classes in various policy fields allows students to pursue their particular policy interests.

Program Structure: The MPP program, limited to twenty-five new students each fall, is a two-year, full-time program with a required internship in the summer between the two academic years. The first year consists largely of required courses grounded in economics, government and law. In the second year, a range of electives in public policy, law, business, marine science, and other disciplines is available. Areas of emphasis include education policy, environmental policy, health care policy, international trade, regulatory policy, and state and local policy.

Internships: An internship during the summer between the first and second years is an important, hands-on element of the MPP program. Students intern in government agencies, private consulting firms, advocacy organizations, or other organizations involved in the public policy process.

Joint/Concurrent Degree Programs: Joint/concurrent degree programs are available with the nationally ranked schools of Law (MPP/JD), Business (MPP/MBA) and Marine Science (MPP/MS or MPP/PhD), and with the Mathematics Department (MPP/MS in Operations Research). Admission to both programs is required, although in many instances students are accepted to a joint/concurrent program after their arrival at William and Mary.

Placement: There is strong demand for policy analysts with the quantitative skills that define the Thomas Jefferson Program in Public Policy MPP. An important part of this demand comes from various levels of government, but there is also a large demand for public policy master's students in the private sector. Many large regulated firms have divisions which require the skills of a public policy analyst. Consulting firms and the not-for-profit sector are two other major employment opportunities commonly open to public policy analysts. For both internships and career placements, William and Mary's locational advantages (proximity to Washington, D.C., Richmond, Norfolk and several medium size cities) contribute to our effectiveness in career placement.

Special Opportunities: On the Williamsburg campus and in our offices in Washington, D.C., William and Mary's Public Policy Program brings the real world into your learning experience. On campus, the Center for Public Policy Research provides the base for bringing client driven projects into the curriculum. First-year MPP students attend a three-day Washington conference examining the breadth of career opportunities available to policy analysts. All MPP students are invited to attend monthly 'Fridays in DC' programs, at which students have informal access to high-level policymakers and policy analysts. Other career events in Williamsburg and Washington occur throughout the year.

Faculty

PROGRAM DIRECTOR **Eric R. Jensen** Professor of Economics (Ph.D., Michigan).

GRADUATE DIRECTOR **Elaine S. McBeth** Associate Director and Adjunct Professor of Economics and Public Policy (M.A., Virginia).

PROFESSORS **Berhanu Abegaz** (Economics) (Ph.D., Pennsylvania), **David P. Aday, Jr.** (Sociology) (Ph.D., Kansas), **Arnab K. Basu** (Economics) (Ph.D., Johns Hopkins), **Lynda L. Butler** (Law) (J.D., Virginia), **Donald E. Campbell** (CSX Professor of Economics and Public Policy) (Ph.D., Princeton), **Neal E. Devins** (Law) (J.D., Vanderbilt), **Davison M. Douglas** (Law) (LL.B. and Ph.D., Yale), **Hugh W. Ducklow** (Glucksman Professor of Marine Science) (Ph.D., Harvard), **C. Lawrence Evans** (Government) (Ph.D., Rochester), **David H. Feldman** (Economics) (Ph.D., Duke), **John B. Gilmour** (Government) (Ph.D., California-Berkeley), **William J. Hausman** (Economics) (Ph.D., Illinois), **James S. Heller** (Law) (J.D., San Diego), **Christopher D. Howard** (Harriman Professor of Government and Public Policy) (Ph.D., Massachusetts Institute of Technology), **Charles H. Koch, Jr.** (Dudley W. Woodbridge Professor of Law) (LL.M., Chicago), **Linda A. Malone** (Marshall-Wythe Foundation Professor of Law) (J.D., Duke), **John J. McGlennon** (Government) (Ph.D., Johns Hopkins), **Alan J. Meese** (Law) (J.D., Chicago), **Jennifer M. Mellor** (Economics and Director, Schroeder Center for Health Policy) (Ph.D., Maryland), **James E. Moliterno** (Law) (J.D., Akron), **Carlisle E. Moody, Jr.** (Economics) (Ph.D., Connecticut), **Roy L. Pearson** (Chancellor Professor of Business Administration) (Ph.D., Virginia), **Alfredo M. Pereira** (Economics) (Ph.D., Stanford), **Ronald B. Rapoport** (John Marshall Professor of Government) (Ph.D., Michigan), Ronald H. Rosenberg (Law) (J.D., North Carolina - Chapel Hill), **Kathleen F. Slevin** (Sociology) (Ph.D., Georgia), **Sarah L. Stafford** (Professor of Economics, Public Policy and Law and Coordinator, Graduate Studies) (Ph.D., Johns Hopkins), and **Dennis L. Taylor** (A. Marshall Acuff, Jr. Professor of Marine Science) (Ph.D., Wales).

ASSOCIATE PROFESSORS **Pamela L. Eddy** (Education) (Ph.D., Michigan State), **Dorothy E. Finnegan** (Education) (Ph.D., Pennsylvania State), **Susan S. Grover** (Law) (J.D., Georgetown), **Carl H. Hershner** (Marine Science) (Ph.D., Virginia), **Robert L. Hicks** (Economics) (Ph.D., Maryland), **Paul Manna** (Government and Coordinator, Undergraduate Studies) (Ph.D., Wisconsin), and **Alemante Selassie** (Law) (J.D., Wisconsin).

ASSISTANT PROFESSORS **Daifeng He** (Economics) (Ph.D., Washington University in St. Louis), **Peter McHenry** (Economics) (Ph.D., Yale), and **Melissa McInerney** (Economics) (Ph.D., Maryland).

EMERITUS PROFESSOR **David H. Finifter** (Ph.D., Pittsburgh).

ADJUNCT PROFESSORS **Christopher Able** (Law) (J.D., William and Mary), and **Christopher Byrne** (Head of Law Research and Instructional Services) (J.D., Harvard).

INSTRUCTOR **John Baltes** (Government) (M.A., Louisiana State University).

RESEARCH PROFESSORS **Harriet O. Duleep** (Center for Public Policy Research) (Ph.D., Massachusetts Institute of Technology), and **Louis F. Rossiter** (Center for Public Policy Research) (Ph.D., North Carolina - Chapel Hill).

SENIOR FELLOW IN FOREIGN POLICY **Robert E. Fritts** Ambassador (ret.) (B.A., Michigan).

General Description

The university offers a two-year interdisciplinary master's degree program that prepares students for careers in public service by combining training in quantitative techniques and economic analysis with instruction in the political, legal, and organizational environments in which policy is made and implemented.

The goal of The Thomas Jefferson Program in Public Policy is to help prepare students for the rigorous demands of responsible careers in public service by providing them with the range of skills and insights that are needed; the analytical and quantitative skills that are essential professional tools; a comprehensive understanding of the policy-making process; and thorough grounding in the ethics of policy-making and the goals of public policy. We aim to train individuals who have the ability to make a major contribution to the efficiency and the responsiveness of government at all levels.

While the primary purpose of the program is to prepare individuals for public service, we recognize that the skills developed in the program are useful in other settings as well, including the private and the non-profit sectors and in the growing linkage between government and the other sectors.

The Thomas Jefferson Program also includes an interdisciplinary undergraduate major in public policy, the Center for Public Policy Research, the Washington Program, conferences, lectures, and visiting faculty and practitioners.

JOINT DEGREE IN LAW AND PUBLIC POLICY

A combined law and public policy program is available in which the student may obtain both a master's degree (M.P.P.) and a J.D. degree in four years, instead of the five years that would be required if each degree were pursued separately. Candidates interested in this joint degree program must apply to and gain acceptance by both the School of Law and The Thomas Jefferson Program in Public Policy.

JOINT DEGREE IN BUSINESS AND PUBLIC POLICY

A combined business administration and public policy program is available in which the student may obtain both a Master of Business Administration degree and a Master of Public Policy degree in three years, instead of the four years that would be required if each were pursued separately. Candidates interested in this joint degree program must apply to and gain acceptance by both the Graduate School of Business Administration and The Thomas Jefferson Program in Public Policy.

CONCURRENT DEGREES IN MARINE SCIENCE AND PUBLIC POLICY

A combined marine science and public policy program is available in which the student may obtain both a M.S. in Marine Science and a M.P.P. degree or a Ph.D. in Marine Science and a M.P.P. degree. The M.S. in Marine Science and the M.P.P. degree may be earned in three years, instead of the four years that would be required if each degree were pursued separately. Candidates interested in these concurrent degree programs must apply to and gain acceptance by both the School of Marine Science and The Thomas Jefferson Program in Public Policy.

CONCURRENT DEGREE IN COMPUTATIONAL OPERATIONS RESEARCH AND PUBLIC POLICY

A combined computational operations research and public policy program is available in which the student may obtain both a M.S. in C.O.R. and an M.P.P. degree in three years, instead of the four that would be required if each degree were pursued separately. Candidates interested in this concurrent degree program must apply to and gain acceptance by both the Department of Computer Science and The Thomas Jefferson Program in Public Policy.

ACCELERATED BACHELOR OF ARTS/SCIENCES AND MASTER OF PUBLIC POLICY

W&M undergraduate students are able to earn both a Bachelor's degree and a Master of Public Policy in five years. Candidates interested in this accelerated degree path must apply to and gain acceptance in their junior year. Acceptance into the accelerated degree path includes the intention that the graduate committee will recommend regular admission to the graduate program when the baccalaureate degree has been conferred. With advance written permission from the program's graduate committee, up to nine graduate credits with a grade of C or higher taken by students in the BA/MPP accelerated degree path may be used to satisfy both graduate and undergraduate degree requirements. Students in the accelerated degree path may take additional graduate public policy classes during their fourth year; these classes will count exclusively toward the MPP degree requirements. Students may also earn up to 9 graduate credits through demonstrating competency in the following first year MPP classes: PUBP 601, 602 and 603. Competency will be demonstrated by passing the final exam of these courses with a grade of B or higher. Students who successfully demonstrate competency in these courses will receive course credit and a grade of P.

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)

Admission

Application forms for admission to graduate study can be downloaded from the program's website (http://www.wm.edu/publicpolicy/gradapp.pdf) or requested from the Associate Director of The Thomas Jefferson Program in Public Policy. Beginning graduate students will enter in the fall. To insure full consideration for admission and financial assistance, applications, including all supporting materials and test scores, should be completed by February 15. Applications received after February 15 will be reviewed on the basis of available space. For admission to The Thomas Jefferson Program, an applicant must have completed the requirements for a bachelor's degree at an accredited college and must have the recommendation of the Graduate Admissions Committee of The Thomas Jefferson Program. All admissions must be approved by the Dean of Research and Graduate Studies, Arts and Sciences. Applicants are required to take the Graduate Record Examination.

To be admitted to the program, a student must demonstrate, through his or her undergraduate record, scores on the Graduate Record Examination, and three letters of recommendation, potential for success in the required quantitative courses, the ability to understand the policy-making process, and the potential to function effectively as a professional in a demanding policy position. No single undergraduate major is required, but students will be expected to have completed course work in the principles of economics. In addition, intermediate microeconomics and introductory statistics are strongly recommended. Students whose preparation is deficient may be required to take advanced undergraduate courses before matriculating.

Academic Status

1. Continuance in Program

After each semester, the student must meet minimum levels of academic progress. The minimum requirements for continuance are as follows:

After semester	Cumulative Graduate Degree Credits	Cumulative Q.P.A.
1	13	2.5
2	25	2.75
3	37	3.0

A student who does not achieve the minimum level of academic progress for continuance or receives a grade below C (quality points = 2.0) in any one of the required core courses will be required to withdraw immediately from the program for academic deficiencies.

2. Satisfactory Progress

In order to graduate, M.P.P. students must have completed 49 hours in the program with a quality point average (Q.P.A.) of 3.0. To continue in the program, a student must make satisfactory progress toward the degree requirements. Satisfactory progress is defined as achieving and maintaining at least a 3.0 Q.P.A. for each semester of graduate study. Students whose Q.P.A. falls below 3.0 in any semester will automatically be placed on academic probation for the following semester. Students permitted to continue in the program on academic probation must earn a minimum of 12 academic credits and a minimum Q.P.A. of 3.0 during the probationary semester. A student who fails to meet the probationary standard will be required to withdraw from The Program for academic deficiencies.

DEGREE REQUIREMENTS FOR THE DEGREE OF MASTER OF PUBLIC POLICY

(See general College requirements in the section entitled 'Graduate Regulations' in this catalog.)
The master of public policy (M.P.P.) degree program is a two-year, full-time, residential program requiring forty-nine hours of course credit. Students accepted for the degrees of MPP/JD, MPP/MBA, MPP/MS in Marine Science, MPP/PhD in Marine Science, or MPP/MS in Computational Operations Research are required to have thirty-seven hours of MPP course credit.

1. The following core courses are required: PUBP500-Mathematics for Public Policy Analysis; PUBP601-The Political Environment; PUBP602-Quantitative Methods I; PUBP603-Quantitative Methods II; PUBP604-Microeconomics of Public Policy; PUBP606-Benefit-Cost Analysis; PUBP607-Law and Public Policy; PUBP609-Ethics and Public Policy; PUBP610-Policy Research Seminar; PUBP612-Public Management and Organizational Behavior.
2. Students are required to complete an internship (at least 10 weeks of full-time employment) in the summer after their first year of the program.
3. In addition to the core, students in the MPP degree program are required to take 21 credit hours of electives, including a minimum of five 3-credit electives, at least one of which must be a 3-credit program approved School of Law course. Students accepted for the degrees of MPP/JD, MPP/MBA, MPP/MS in Marine Science, MPP/PhD in Marine Science, or MPP/MS in Computational Operations Research are required to take a minimum of 9 credit hours of electives, at least one of which must be a 3-credit program approved School of Law course. Law courses are second year electives. Students may pursue one of the suggested areas of emphasis below or an alternative set of courses developed with consent of the Director. Students must petition the curriculum committee for approval of alternative electives. Areas of emphasis include education policy, environmental policy, health care policy, international trade, regulatory policy, and state and local policy.

Description of Courses

Unless otherwise noted, all courses are graded using standard grading [A, B, C, D, F] scheme (See VI. Grading and Academic Progress in the section entitled 'Graduate Regulations' in this catalog) and may not be repeated for credit (See Repeated Courses requirements in the section entitled 'Graduate Regulations' in this catalog). No credit toward a degree will be allowed for a course in which a student receives a grade below C (quality points = 2.0).

500. Mathematics for Public Policy Analysis.

Fall (1) McBeth. Prerequisite: College-level algebra. Graded Pass/Fail.

An introduction to mathematical methods applied to economics and policy analysis. The emphasis is on learning the techniques rather than proving theorems. Topics include: linear algebra, comparative static analysis, and optimization problems.

550. Macroeconomics for Public Policy.

Fall (1) Abegaz. Graded Pass/Fail.

This mini course, pitched between Principles and Intermediate levels, provides a bird's-eye view of the aggregate open economy with a focus on the determination of output, employment, interest rates, exchange rates, and inflation. Much of the course will be devoted to reviewing the basic models and principles of macroeconomics as they apply to policies for short-run fluctuations in employment and prices (business cycles), but long-run growth will also be addressed.

600. Independent Study.

Fall and Spring (Variable credit, 1 to 3 credits) Staff. (Note: this course can be Pass/Fail or letter graded).

Course content varies: special topics courses; independent supervised research; experimentation with new seminars. This course may be repeated for 6 credits.

601. The Political Environment.

Fall (3) Gilmour.

An introduction to the political environment in which policy making occurs. Major themes include the impact of electoral incentives on the design of policy instruments, the importance of institutional structure, and the roles played by uncertainty and expertise in the political process.

602. Quantitative Methods I.

Fall (3) Manna.

An introduction to the methods and techniques of statistical analysis with emphasis on public policy applications. Topics include: descriptive statistics; probability; sampling; survey design; hypothesis testing; correlation; regression; and introduction to multiple regression. This course includes training in the responsible and ethical conduct of research, including discussions of the proper use of data and reporting of results in order to avoid fabrication, falsification, and plagiarism.

603. Quantitative Methods II.

Spring (3) He, Jensen. Prerequisites: PUBP 602.

An introduction to theory and practice of econometrics with emphasis on techniques most useful to policy analysts. Topics include: regression estimation and the theory of least squares including examination of Gauss-Markov assumptions, properties of estimators, and estimation issues when Gauss-Markov assumptions are violated.

604. Microeconomics of Public Policy.

Fall (3) Archibald, Stafford.

This course develops basic concepts of microeconomic theory, with an emphasis on the economics of the public sector. Topics include: market economy, prisoner's dilemma, preferences, constrained choice, consumer demand, profit maximization in a competitive market, market failure, and the effects of taxes, subsidies, and regulations.

605. Survey Methodology.

Spring (3) Rapoport.

An introduction to the formulation, implementation and analysis of political and public policy surveys. Topics to be covered include the psychology of the survey response, sampling, interviewing, focus groups, experimental design, hypothesis testing and data analysis. Students will carry out individually designed and group designed surveys, and write papers and reports around these projects.

606. Benefit-Cost Analysis.

Spring (3) McInerney.

This course examines basic concepts and techniques involved with benefit-cost analysis. This approach will be applied to a variety of public policy issues and programs. Topics include: choice of discount rate, treatment of income distribution, intergovernmental grants, tax expenditures, regulation, and program evaluation.

607. Law and Public Policy.

Fall (3) Byrne, Heller.

Law and Public Policy examines the role of the judiciary as a policy-making institution, including its interactions with legislative, regulatory, and private-sector entities. Students analyze several cases currently before the United States Supreme Court and, through the prism of those cases and other readings, explore the concepts of judicial review, separation of powers, and federalism, and also external influences on law-making bodies, including lobbying, public opinion, and the media.

608. Budget Policy-Making.

Fall (3) Gilmour, Howard.

An introduction to public budgeting at the national, state, and local levels, presented from three perspectives: macroeconomics, political science, and public administration. Emphasis is also given to the budgetary strategies employed by bureaucrats, politicians, and interest group representatives as they pursue their policy agendas.

609. Ethics and Public Policy.

Spring (3) Baltes.

This course examines the ethical dimensions of domestic and international policy problems. It contrasts moral policy-assessment with economic, legal and political analysis; outlines a policy-making procedure that includes moral assessment; considers a code of professional ethics.

610. Policy Research Seminar.

Fall (3) Finifter, Jensen, Rossiter.

This one semester research and writing intensive seminar involves both the further development of policy research skills and communication skills relevant to policy-making. Students will be involved in small-group, client-driven policy analysis projects and an individual project. In addition, students will analyze at least one quick-turnaround policy problem.

612. Public Management and Organizational Behavior.

Fall (3) Gilmour, Manna.

An examination of the ways in which public organizations and their leaders cope with the policy and management challenges that confront administrative agencies in a democratic society. Theoretical literature as well as case studies will be utilized.

614. Topics in Public Policy.

Fall and Spring (3) Staff. This course may be repeated for credit if there is no duplication of topic.

Topics change each semester. Please consult the Thomas Jefferson Program in Public Policy web site for the current listing of topics offered.

615. Cross Section Econometrics.

Fall (3) Hicks, Jensen. Prerequisite: PUBP 603.

Economic data often come as a cross-section of data points, frequently collected as part of a sample survey. The nature of these data calls for the use of a specialized set of tools, which will be developed in the course. Among the models to be examined are discrete, censored and truncated dependent variable, sample selectivity and duration models. Hands-on analysis of data sets will feature prominently.

616. Time Series Econometrics.

Spring (3) Moody. Prerequisite: PUBP 603.

This course is an introduction to the econometric analysis of time series data. Topics include ARIMA models, forecasting, analysis of nonstationary series, unit root tests, co-integration and principles of modeling.

620. Regulation of Markets.

Spring (3) Stafford.

An in-depth study of government intervention in markets. Principal focus on characteristics and effects of rules and institutions governing markets and the definition of areas of market failure. Topics include: regulation of monopoly, antitrust enforcement, and regulation of spill-overs.

621. Administrative Law.

Fall (3) Devins, Koch.

A study of practice in the administrative process, examining the procedures for administrative adjudication and rulemaking; legislative and judicial control of administrative action; and public access to governmental processes and information. [Cross-listed with LAW 453]

622. Environmental Policy.

Fall (3) Hicks.

This course explores policy making for environmental problems and focuses on issues that are local, national, and international. This course will cover the application of welfare economics to environmental problems. Topics include differences in consumer surplus and other measures of economic welfare and techniques to measure the economic value of environmental resources. We examine national environmental policy, and how that policy is implemented at a local and regional level. We examine the U.S. laws and regulations as well as each agency's approach for quantitatively assessing the benefits and costs of environmental policy.

623. Health Care Policy.

Fall (3) Rossiter, Mellor.

The application of microeconomic theory, quantitative analysis, and policy evaluation to the health care delivery and financing systems. Coverage includes the economic dimensions of health care, health status, medical manpower, hospitals and other institutional providers, third party financing, quality assessment, systematic analysis, and national health policies.

624. Law and Medicine Seminar.

Spring (3) Hubbard.

A study of medical jurisprudence and hospital law focusing on medical malpractice and tort law reform and contemporary problems including the regulation of health care delivery systems, access to health care, and antitrust challenges. [Cross-listed with LAW 518]

626. Law and Resource Management.

Spring (3) Taylor.

An interdisciplinary course designed to examine the interrelationships between scientific and legal concepts. Issues, legislation, and institutions associated with coastal zone management, outer continental shelf development, fisheries, and other questions related to marine resource management will be examined. [Cross-listed with MSCI 543]

627. Law, Policy and Environment.

Spring (3) Malone.

A study of the environmental policy-making process. Topics include: ecological and economic foundations of environmentalism, traditional institutional responses, the policy-making process in the context of our legal system, constitutional questions raised by judicial and agency involvement, and economic, political and ethical concerns raised by different theories of environmental decision-making. [Cross-listed with LAW 439]

628. Environmental Law.

Spring (3) Malone, Rosenberg.

A study of nature and causes of environmental pollution and legal techniques for its control. The course considers common law, environmental impact assessment process, and basic regulatory framework for air, water and solid hazardous waste control, and main policy issues presented by each. Other: role of federal courts in reviewing agency action, new developments in administrative law, natural resource management and allocation issues, toxic and hazardous substance regulation, and enforcement of laws. [Cross-listed with LAW 424]

630. The Economics of Policy-Making at the State and Local Level.

Fall (3) McInerney.

A topics course including, but not limited to, the measurement of state and local fiscal capacity, urban problems, urban infrastructure development, intergovernmental aid to localities, industrial location decisions, and local land use policy and its impact on growth and development.

631. State and Local Politics and Policy-Making.

Spring (3) McGlennon.

This course examines the nature of state and local governments and their policy processes and outcomes, including relationships among levels of government, explanations for policy variations among states and localities, and constraints on attempts to deal with their public policy responsibilities.

632. Local Government Law.

Spring (3) Rosenberg.

This course examines local government powers and relation to state and federal authority with emphasis on state and federal statutory and constitutional restraints on operation of local government entities. Topics include: Dillon's Rule, home rule, preemption, annexation, personnel matters, public contracts, borrowing and taxation, and public entity tort liability and immunity. [Cross-listed with LAW 429]

633. Land Use Control.

Spring (3) Butler, Rosenberg.

Analysis of legal doctrines governing use of land in modern society. Topics include: zoning, land planning, sub-division regulations, rezoning, variances, conditional uses, and mandatory dedications, common law doctrines and private law methods which affect land use, and historic preservation as a land use problem. [Cross-listed with LAW 425]

635. Fundamentals of Environmental Science for Policy.

Fall (3) Taylor, Ducklow.

This course is intended primarily for students in Law, Public Policy and related disciplines, and is designed to introduce these students to the science of natural systems and ecological processes. The course examines the current state of our understanding in terms that will give the student confidence and the facility to critically assess theories and observations in environmental science. With this as a foundation, topics discussed will include: the enhanced greenhouse effect, coastal eutrophication, biodiversity loss, water resources, sea level rise, environmental contamination, land use trends, and invasive species impacts.

640. Labor Market Policy.

Spring (3) McHenry.

This course examines how public policies affect the labor market. Topics include: wage determination, education, training, minimum wages, immigration, unemployment compensation, social security, disability insurance, comparable worth, workplace safety, welfare reform, and affirmative action.

642. Legal Foundations of American Social Programs.

Spring (3) Koch.

This course examines law relating to major benefits programs, including social security, medicare/medicaid, unemployment, employee rehabilitation, AFDC, and Food Stamps, including decision-making processes used in governance of these programs and the basic substantive law created for and by these programs. [Cross-listed with LAW 430]

643. Employment Discrimination.

Spring (3) Grover.

A study of federal laws prohibiting discrimination in employment on account of race, national origin, gender, religion and handicapping condition, with emphasis on Title VII of the 1964 Civil Rights Act, the Age Discrimination in Employment Act and the Equal Pay Act. [Cross-listed with LAW 452]

644. The Financing of Higher Education.

Fall (3) Eddy, Finnegan.

An overview of the financing of higher education. Besides becoming acquainted with the literature and main issues in finance, students will develop the ability to examine and analyze financial statements, assess the budget as an instrument of control, and relate the budget to the educational program. [Cross-listed with EPPL 676]

645. Higher Education and Public Policy.

Spring (3) Staff.

A seminar for advanced graduate students in which the general topic of the relationship between the government and higher education is developed. Major attention is given to developments since World War II. [Cross-listed with EPPL 713]

646. Employment Law.

Fall (3) Abel, Douglas.

This course will focus on a variety of common law and statutory legal issues surrounding the employer-employee relationship. Issues considered will include employment at-will, employee privacy, covenants not to compete, regulation of wages and hours, ERISA, worker's compensation, occupational health and safety, and unemployment compensation. This course will not overlap either LAW 452-Employment Discrimination or LAW 407-Labor Law [Cross-listed with LAW 456]

650. International Trade: Theory and Policy.

Spring (3) Feldman.

Trade influences national income, resource allocation, and the distribution of income. We use economic theory to develop these ideas and to relate them to the public policy debate. Topics include: the economics of protectionism, industrial policy and strategic trade issues, regional integration, and the policymaking process itself.

651. Patterns of Economic Development and Policy.

Fall (3) Abegaz, Basu.

This course applies relevant economic theories to the study of growth and structural change in less industrialized countries. Topics include sources of growth, industrialization, trade, income distribution, urbanization, and the state. Various techniques of policy analysis will be examined through selected case studies.

652. Public International Law.

Fall (3) Malone.

An examination of the nature and sources of international law and municipal law; the law of treaties; principles of jurisdiction; statehood and recognition of states and governments; sovereign immunity; rights of aliens; human rights; environmental issues; and regulation of international coercion. [Cross-listed with LAW 409]

Elective Courses [Not Cross-listed]

BUSINESS

BUSN 538-International Financial Management
BUSN 554-Human Resource Management
BUSN 578-Forecasting Methods and Applications
BUSN 583-Non-Profit Organizations

EDUCATION

EPPL 601-Educational Policy: Development and Analysis
EPPL 625-Current Issues in Higher Education
EPPL 628-History of Higher Education
EPPL 715-Public Schools and Public Policy

HISTORY

HIST 534-U.S. Foreign Relations 1901-present

LAW

LAW 339-Natural Resource Law
LAW 398-Election Law
LAW 411-Antitrust
LAW 412-Legislation
LAW 426-Energy Law
LAW 454-Economic Analysis of Law
LAW 458-Health Law and Policy
LAW 460-Mass Media Law
LAW 481-Bioethics/Medical Ethics and Law
LAW 485-Immigration Law
LAW 492-Women and the Law
LAW 496-International Business Transactions
LAW 497-International Trade Law
LAW 524-Environmental Law Seminar
LAW 538-National Security Law Seminar
LAW 546-Government Contracts Seminar
LAW 552-State and Local Government Finance
LAW 562-Legislative Process Seminar
LAW 579-Family and State
LAW 618-Campaign Finance in American Election

MARINE SCIENCE

MSCI 542-Principles and Theory of Resource Management

MATHEMATICS

MATH 523-Operations Research: Deterministic Models
MATH 524-Operations Research: Stochastic Models

FACILITIES

The College of William and Mary has a number of outstanding facilities and services available to students. For more information about any of the facilities listed below, please see the contact information provided.

SWEM LIBRARY - www.swem.wm.edu

Carrie Cooper, Dean of University Libraries
(757) 221-4636

The Earl Gregg Swem Library actively participates in the teaching and research missions of the College of William and Mary by providing services, collections, staff, and facilities that enrich and inform the educational experience, and promote a lifelong commitment to learning.

The library fulfills this mission by helping students, faculty, staff, and visitors find information and learn research skills; selecting and acquiring the best resources for the College's curricular and research needs; and organizing, preserving, and providing access to these resources efficiently and effectively.

Hours for the library, various departments, and branch libraries are posted at http://swem.wm.edu/hours.cfm. Because these hours may vary, especially during interim periods and holidays, please check the posting or call (757) 221- 4636 to confirm hours before you visit.

Swem Library includes networked and wireless connections throughout the building. There are more than one hundred computers, including laptops, in the library. Numerous group study rooms are available for collaborative use.

Collections and Reference Services

Contact (757) 221-3067 or www.swem.wm.edu/services/reference/

Government Information Services

Specialized indexes for microform collections of government titles are available in the department. Contact the Government Information Department at (757) 221-3065.

Circulation Services

Please visit the library's home page [www.swem.wm.edu] and click on 'Your Records'. Contact the Circulation Department at (757) 221-3072.

Reserve Readings

Reserves Department at (757) 221-3072.

Interlibrary Loans

Interlibrary Loan Department at (757) 221-3089.

Media Center

Contact the Center at http://swem.wm.edu/services/media/ or (757) 221-1378 or sms/text 757-561-0791.

Special Collections Research Center

Special Collections at http://swem.wm.edu/scrc/index.cfm.

Swem Departmental Libraries

For more information about Swem's departmental libraries, please visit http://swem.wm.edu/libraries.

- Chemistry Library, Integrated Science Center Room 1022, (757) 221-3119, contains approximately 12,000 volumes and journals.
- Geology Library, contains 17,000 volumes, journals and over 21,000 maps, but all materials have been transferred to Swem Library or the off-site stacks and materials will be available via Swem Library's online catalog, http://swem.wm.edu/.
- Music Library, 250 Ewell Hall, (757) 221-1090, contains more than 18,000 sound recordings, 10,000 pieces of printed music, and video recordings of musical performances and musical instruction.
- Physics Library, contains over 30,000 volumes and journals, undergoing construction but materials will be available via Swem Library's online catalog, http://swem.wm.edu/.

Other William and Mary libraries include the Business/Professional Resource Center (757) 221-2916, http://business.wm.edu/prc/; Education/Learning Resource Center (757) 221-2311; Law (757) 221-3255, www.wm.edu/law/lawlibrary/index.php; and Marine Science (804) 684-7116, www.vims.edu/library/.

Information Technology
www.wm.edu/it/

(757) 221-HELP

The College of William and Mary's Information Technology department is devoted to assisting students and providing invaluable resources through one-on-one consultations, the Technology Support Center, and our extensive web site. With these points of interaction, we hope to help faculty, staff, and students become proficient users of campus technology. IT maintains a wide range of computing support for students, from answering questions about personal computers, to PAC Labs. We offer guidance and training in the areas of software setup and use, network connection and navigation, and general computer operation.

Public Access Computing (PAC) Labs
www.wm.edu/offices/it/academics/labs/printing/index.php

PACLabs are provided across campus to efficiently attend to the needs of the College's students, staff, and faculty.

Academic Software
www.wm.edu/offices/it/a-z/software/index.php

The Software Repository has a collection of free and licensed software for the W&M community.

The William and Mary Center for Archaeological Research
www.wm.edu/wmcar/

The William and Mary Center for Archaeological Research provides cultural resource management (CRM) services for public and private organizations. These services include archaeological studies, historical research and interpretation, and a wide variety of related technical services. The Center is staffed with professional archaeologists whose combined

expertise encompasses both prehistoric and historic-period sites and artifacts from Canada to the Caribbean. The Center facilities include offices, laboratories, and collection storage with access to specialized computer and materials testing equipment.

The William and Mary Archeological Conservation Center, a division of the Department of Anthropology, has as its purposes the conservation of archaeological artifacts from historic sites and the introduction of students to the theory and practice of archaeological conservation. The Conservation Center engages in contract conservation work with federal, state and private agencies. Through the Center's operations, students are given the opportunity to observe and participate in the conservation treatment of metals, organic materials, glass and ceramics from a variety of periods and places, and to pursue interests in conservation through laboratory experience in directed research projects.

The Omohundro Institute of Early American History and Culture
oieahc.wm.edu

The Omohundro Institute of Early American History and Culture, the oldest organization in the United States exclusively dedicated to the advancement of study, research, and publications bearing on the history and culture of early America until approximately 1815, marked its sixtieth anniversary in 2003. Founded as the Institute of Early American History and Culture in 1943 by The College of William and Mary and The Colonial Williamsburg Foundation, the Institute, which is still jointly sponsored by those institutions, was renamed in 1996 in recognition of a generous endowment pledged by Mr. and Mrs. Malvern H. Omohundro, Jr. As specifically directed by its constitution, the Institute stimulates interest in the earliest period of American history, assists writers and scholars in their work, maintains the highest standards of historical accuracy and integrity, and furthers an understanding of the early republic. The Institute's focus also encompasses the Caribbean, Latin America, the British Isles, Europe, and Africa, insofar as the study of the histories and cultures of these places is relevant to the mainland of North America from 1500 to 1815.

Science Laboratory Facilities

Phases 1 and 2 of the Integrated Science Center, opened in 2008-09, are state-of-the-art facilities that house the Biology, Chemistry, and Psychology departments. ISC 1 and 2 provide a total of 70 teaching and research laboratories as well as faculty and graduate student offices and support facilities for innovative research.

For Biology, there is a rooftop greenhouse complex, a herbarium of vascular plants that contains more than 40,000 specimens, a core molecular biology facility, and a variety of spectrophotometer, electron microscope, ultracentrifuge, radioisotope, and other laboratories. The Laboratory of Endocrinology and Population Ecology contains extensive experimental and animal-maintenance installations.

For Chemistry, there are stockrooms, a reading room, a glass-blowing shop, shared instrumentation laboratories for multi-nuclear magnetic resonance, chromatography, spectroscopy (uv/visible, fluorescence and atomic absorption), mass spectrometry and polymer characterization, as well as a regional X-ray diffraction facility. These facilities, and collaborations with other departments, the Virginia Institute of Marine Science, the NASA Langley Research Center in Hampton and institutions throughout the US, support research across the spectrum of traditional chemistry areas.

For Psychology, there are observation and research rooms, an animal colony, and laboratories for studies in human and animal physiology, perception and cognition, and social psychology. There is also a family therapy teaching laboratory, and developmental psychology laboratories devoted to infant, child and adolescent research. The Eastern State Psychiatric Hospital, two miles from campus, provides additional facilities as well as assistantships for graduate students.

William Small Physical Laboratory (Small Hall) houses the Physics department. It contains classrooms, lecture halls, faculty and staff offices, teaching laboratories, a departmental library, extensive research laboratories, a machine shop, specialized computing facilities, a small astronomical observatory, and office space for all physics graduate students. Research is conducted in nuclear/particle/high-energy physics, condensed matter physics, atomic/molecular/optical physics, non-linear dynamics/plasma physics, computational physics and biological/chemical physics. The Physics Department has a close working relationship with the Applied Science Department and the Thomas Jefferson National Accelerator Facility (Jefferson Lab) located in Newport News. In addition, studies in molecular physics and fluid dynamics are conducted in collaboration with the NASA Langley Research Center in Hampton. In Summer 2011, the Department moved into the newly expanded and renovated Small Hall, equipped with state-of-the-art research space.

McGlothlin-Street Hall is a technologically sophisticated building. It includes six applied science labs, four geology labs and a library, and six computer science labs. It contains extensive cable and wireless network access. The Geology department houses sophisticated microscopes and other equipment for studying geological specimens. McGlothlin-Street Hall houses specialized computational labs dedicated to research and graduate training in computational systems, networks, high-performance computing, mathematical modeling, and computational biology. In addition, polymer science, thin film materials science specializing in nanotechnology, systems neurophysiology, imaging, and computational neuroscience laboratories with vivarium access are available. The Applied Science Department is a partner in the Applied Research Center (ARC) at Jefferson Laboratory, with other area universities, NASA Langley Research Center, and Jefferson Lab. Together they share characterization, processing and test facilities. The leading example is the world's first high average power free electron laser (FEL). ARC also houses the Jefferson Lab Library.

School of Marine Science & Virginia Institute of Marine Science
www.vims.edu

The 38-acre campus is located at Gloucester Point on the York River, an important estuary with easy access to the Chesapeake Bay and the nearby Atlantic Ocean. The Institute and the School are ideally situated to conduct research and teaching in marine, estuarine, and freshwater environments. The campus of the Eastern Shore Branch Laboratory at Wachapreague, Virginia, offers access to the embayments, salt marshes, and barrier beaches of Virginia's Eastern Shore. At Wachapreague are located laboratories for mariculture, aquaculture genetics, and other research as well as dormitory and classroom space. The Institute has approximately 300 scientists, support technicians and staff. At present there are 53 faculty members and about 130 graduate students within the School of Marine Science; the number of students pursuing M.S. and Ph.D. degrees is about equal.

Center for Public Policy Research
www.wm.edu/publicpolicy

The Center for Public Policy Research, the research arm of the College of William and Mary's Thomas Jefferson Program in Public Policy, was established to create cooperative relationships with public and private organizations that result in important learning opportunities for students and opportunities that enhance faculty teaching and scholarship.

Graduate Center
www.wm.edu/as/graduate/graduatecenter/index.php

The mission of the Graduate Center is to support and promote the culture of advanced study at the College of William and Mary. The Graduate Center provides students with up-to-date advice and interdisciplinary opportunities to develop the professional skills needed to take charge of their own careers. Functioning as a focal point between the University and the surrounding community, the Graduate Center also promotes greater public understanding of the role of graduate studies in the life of the University.

STUDENT LIFE

Graduate Housing

The College of William and Mary offers a limited number of apartment spaces for graduate students in The Lettie Pate Whitehead Evans Residences (referred to as the Graduate Complex), http://www.wm.edu/offices/residencelife/oncampus/residencehalls/graduate/index.php. These spaces are only available to single graduate students without children in two, three and four bedroom apartments. The 2011-2012 semester rates are projected to be $2833 for a two-bedroom apartment and $2783 for a triple or quad apartment. Payment arrangements can be made on a per semester or payment plan basis (semester payments can be broken down into four payments per semester). Students who are engaged in courses or research throughout the summer may request housing arrangements through the Residence Life Office. Consideration for graduate housing is contingent on submission of an online housing application. Upon acceptance to a graduate program you may submit an application on-line. Hard copies may also be submitted and will be date stamped once received in Residence Life. Housing will then be offered on a first come first served basis beginning in the month of May until all the allotted spaces for the various graduate schools have been filled.

Once a housing assignment has been offered and accepted by you, a housing agreement will be mailed to you. This is a legally binding agreement for the full academic year. A $200 Room Reservation Deposit will be required to reserve the offered room space. This deposit will be applied to your first semester's rent. In addition, a separate check for a $75 Room Damage Deposit is required. This deposit will be refunded to you upon leaving college housing provided there are no damages to the premises and the student's college account is current. NOTE: Failure to pick up a key will NOT release you from your signed housing agreement. Students who leave college housing for any reason, but continue to be enrolled, will NOT be eligible for a refund of their rent charge.

Roommates & Off-campus Housing

The College maintains an Off-Campus Housing Listing Service which provides a web site for individuals who want information and for those who are seeking or providing housing http://www.wm.edu/offices/residencelife/links/offcampushousing/index.php. Through this web site you may find available off-campus housing or other students looking for a roommate to share an off-campus apartment, etc. Information may also be available for new graduate students through their departments for housing possibilities, including opportunities to share accommodations with other graduate students.

Dining Services

William and Mary Dining Services provides a comprehensive dining program featuring a variety of meal plan options to meet the needs of each student. For detailed information, please see http://www.wm.edu/offices/auxiliary/dining/index.php.

The College of William & Mary Bookstore

Located on Merchants Square in Colonial Williamsburg, The College of William & Mary Bookstore, by Barnes & Noble, offers both new and used textbooks, as well as over 125,000 general book titles, school and dorm supplies, and William & Mary clothing and gifts. New and used textbooks can be sold back to the store through the buyback program and the Bookstore is also the source for official class rings, graduation regalia and announcements. Students can enjoy a 20% discount on all William & Mary clothing every day with a valid student ID. For more information, call the Bookstore at (757) 253-4900, or visit our web site at http://wm.bkstore.com/.

William and Mary Express Account - 221-2105

ID Office, Campus Center 169
Monday - Friday, 8:00 am - 5:00 pm
E-mail: idoffice@wm.edu
Web site: http://www.wm.edu/offices/auxiliary/wmexpress/index.php
Online deposits: http://www.wm.edu/offices/auxiliary/wmexpress/deposit/index.php

The William and Mary Express Account is a debit account linked to every student's ID card. When deposits are made to the account, students can use their ID cards to purchase a variety of goods and services on campus and off-campus. The ID Office reserves the right to make changes to the rules and regulations for use of the William and Mary Express Account. Should there be any changes, advanced notification will be given to the users of the Express Account.

Student ID Cards - 221-2105

ID Office, Campus Center 169
Monday - Friday, 8:00 am - 5:00 pm
E-mail: idoffice@wm.edu
Web site: http://www.wm.edu/offices/auxiliary/idoffice/index.php

The William and Mary student identification card is the College's official form of identification prepared by the ID Office for each student. It functions as a campus meal card, a library card, a door access card to residence halls, recreational facilities and academic buildings, and a bus pass for all Williamsburg Area Transit busses.

Student ID cards are not transferable and are intended for the sole use of the student to whom it is issued. An ID card used by anyone other than its owner may be confiscated and the person using the ID may be subject to disciplinary action. Because cards provide access to secured buildings and financial accounts, lost cards should be reported immediately to the ID Office during business hours, and to Campus Police evenings and weekends. These offices can issue temporary replacement cards at no charge to allow students time to search for misplaced ID's without losing access to accounts and buildings. This process also ensures that misplaced cards cannot be used by others. Temporary replacement cards must be returned to re-activate a new or found ID card. There is a $20 charge for lost, damaged or temporary cards not returned. If an ID card has been stolen and a police report has been filed, the replacement charge is $5.00.

Parking Regulations

All motor vehicles operated or parked on College property, including motorcycles, motorbikes and vehicles with Handicapped plates or hang tags, must be registered with Parking Services. A registration decal is required to park on campus at all times, from Monday at 7:30 a.m. until Friday at 5:00 p.m., except in metered spaces as posted. Vehicle registration cards or copies must be presented to purchase a parking decal. The Parking Services office is located at 201 Ukrop Way, and is open Monday-Friday, 7:45 a.m.-4:30 p.m. For more information, call 221-4764, email parked@wm.edu, or visit our web site at http://www.wm.edu/parking/.

Campus Police Department - 221-4596 (emergency dial 911)

Campus Police Station 24 hours a day, seven days a week, www.wm.edu/police/
The College of William and Mary Police Department is a State of Virginia accredited police department providing comprehensive police services to the university community. The staff of the Department is committed to the creation and maintenance of an environment conducive to the education mission of the College. We are open 24 hours a day 7 days a week.

Rights and Student Organizations

The Statement of Rights and Responsibilities was approved by the College community-faculty, students, and administration and adopted by the Board of Visitors in 1973. It elaborates in the context of the College environment the rights and responsibilities of all citizens of the state and nation. The text of the Statement may be found in the Student Handbook.

The Honor System is one of the College's most treasured traditions. Every student at the College is bound by its tenets, which are at the basis of all scholarship. The Graduate Student Association administers the system for graduate students in Arts and Sciences. The principles of the Honor System and the method of administration are described in the Student Handbook.

The Student Handbook contains the text of the Statement of Rights and Responsibilities, a description of the Honor System, an explanation of other regulations bearing on graduate student life and of the procedures by which these are administered, and information on student government. The Student Handbook is available on the "Know Your Rights and Responsibilities" section of the myWM student home page. Limited copies also are available upon request at the Office of the Dean of Graduate Studies and Research.

The Graduate Student Association is a voluntary organization open to all graduate and unclassified (post-baccalaureate) students enrolled in Arts and Sciences. To participate, students must be registered at the College with part-time, full-time or continuous enrollment status. The purpose of the Association is to advance the academic and social interests of its members. Members of the Graduate Student Association Council are elected at meetings of students in each department at the beginning of the fall semester.

Student government at William and Mary is vested in the Student Assembly. The Assembly provides a voice for both graduate and undergraduate student opinion and a means through which students participate in the growth of a strong community. It has four basic objectives: (1) to provide a voice for student opinion, (2) to educate and inform the student body, (3) to fairly and equitably allocate the student activity fee, and (4) to provide cultural and social programming and student services. In particular, the Graduate Council of the Student Assembly represents the unique interests of graduate students in all five graduate schools at the College. The president and vice president of each school's graduate association serve as members of the Graduate Council of the Student Assembly.

Athletics and Recreation Sport Activities

The College provides fourteen tennis courts, jogging trails, an exercise trail and numerous other playing fields.

The College's newly renovated recreational facility includes an 8-lane pool, rock-climbing wall, 3-court gymnasium, fitness room, free weight room, and various courts which can be used for racquetball or squash (www.wm.edu/offices/recsports/reccenter/index.php)

Intramurals are separated into co-educational, men's and women's divisions for most

activities. Intramural Play is held for each of over 30 sports/activities during the year, including basketball, volleyball, softball, floor hockey, flag football, soccer, kickball, tennis, racquetball, and several races to name a few. Fitness classes are available for a minimal cost. A few examples of those classes are aerobics, boot camp, yoga, kickboxing, floor/bar and spinning. There are also 44 sport clubs most of which are available to graduate students. For more information on Recreational Sports please go to the web site at http://www.wm.edu/recsports/. Cary Field at Zable Stadium (seating capacity 15,000) provides a stadium for intercollegiate football and track. Busch Stadium provides a facility (seating capacity of 2,500) with artificial turf and lights and a grass practice field. Soccer, lacrosse, and field hockey teams compete in this facility. The McCormack-Nagelsen Indoor Tennis Center, located beside the School of Law, houses six additional tennis courts. The baseball team uses Plumeri Park (seating capacity 1,000), a lighted baseball stadium, for its games. William and Mary Hall has an indoor seating capacity of 10,000 for basketball. There are auxiliary areas for aerobic exercise, gymnastics, and adapted sports, plus a modern, fully equipped training room and strength and conditioning center for intercollegiate athletics.

Graduate students who pay the full tuition and general fee are admitted to all athletic contests by presenting their ID cards.

www.wm.edu/about/visiting/campusmap/index.php

BUILDING	GRID	MAP#	BUILDING	GRID	MAP#	BUILDING	GRID
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]